



Grant-in-Aid for Fisheries

1986 Program Activities

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National Marine Fisheries Service
2570 Dole Street
Honolulu, Hawaii



U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

U.S. DEPARTMENT OF COMMERCE

C. WILLIAM VERITY, SECRETARY

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

J. Curtis Mack, II,
Assistant Secretary, NOAA

National Marine Fisheries Service

William E. Evans
Assistant Administrator for Fisheries

GRANT-IN-AID FOR FISHERIES
PROGRAM ACTIVITIES
1986

Prepared by
Grant-in-Aid Staff
Office of Fisheries Management
Austin Magill, Paul Martenson
and Edith McClure

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Cover Photo

The photo shows a gillnetter, the Rolling Stone,
in the waters near Gloucester, Massachusetts.
Her stern is full of dogfish.

Photo is courtesy of Susan Olsen,
National Marine Fisheries Service,
Northeast Regional Office
Gloucester, Massachusetts.

AUTHORIZATION

This report is submitted in compliance with the requirement of Section 9(2) of the Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742d(7) and Section 2 of the Anadromous Fish Conservation Act of 1965, as amended, 16 U.S.C. 757b.

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GRANT-IN-AID FOR FISHERIES

PROGRAM ACTIVITIES 1986

by

Grant-in-Aid Staff

INTRODUCTION

This is the 18th in a series of annual publications on program activities under the Grant-in-Aid for Fisheries Program of the Office of Fisheries Management, National Marine Fisheries Service (NMFS).

Information presented in this report provides State program coordinators and administrators, Federal personnel, project personnel, and others concerned with research, development, conservation, and management of our fishery resources with a convenient reference to the grant-in-aid program. This publication will also facilitate planning, coordination, and integration of State, Federal, and private sector activities concerned with the fishery resources.

THE ACTS

The NMFS Grant-in-Aid program is authorized under two Acts:

1. The Commercial Fisheries Research and Development Act of 1964 (Public Law 88-309 as amended) - Authorizes the Secretary of Commerce to cooperate with the 50 States, the Commonwealths of Puerto Rico and the Northern Mariana Islands, and the Governments of the Virgin Islands, Guam, American Samoa, and the Trust Territory of the Pacific Islands, in carrying out research and development of the Nation's commercial fisheries. Projects eligible for funding include research, development, construction, and coordination. Cost-sharing projects under subsection 4(a) are funded up to 75 percent level of Federal participation, whereas projects under subsection 4(b), to alleviate resource disasters, may be financed 100 percent with Federal funds. This Act would have expired June 1973; however, it was extended by Public Laws 92-590, 95-53, 96-62 and 97-389 for an additional 12 years, or to September 30, 1985. The authorized levels are \$5 million for subsection 4(a), and \$2.5 million for subsection 4(b).

2. The Anadromous Fish Conservation Act of 1965 (Public Law 89-304 as amended) - Authorizes the Secretary of Commerce and the Secretary of Interior to enter into cooperative agreements with States and other non-Federal interests for the conservation, development, and enhancement of the anadromous fishery resources of the Nation and the fish in the Great Lakes and Lake Champlain that ascend streams to spawn, and for the control of the sea lamprey. The program is administered at the Federal level jointly by the National Marine Fisheries Service and the U.S. Fish and Wildlife Service. Federal funds up to 50 percent, 66 2/3 percent when two or more States cooperate, or 90% to carry out projects required by interstate fishery management plans, may be used to finance project costs. State fishery agencies, colleges, universities, private companies, and other non-Federal interests in 31 States bordering the oceans and the Great Lakes may participate under the Act. All projects must be coordinated with the State fishery agency concerned. The authorization for this Act was renewed in January, 1983 by Public Law 97-453. This Act set authorized levels at \$7.5 million for fiscal years 1983, 1984, and 1985 for grants under Section 4. Section 7, the emergency research program to study striped bass populations and to identify factors responsible for the current decline, was reauthorized for fiscal years 1985 and 1986 at \$1 million each year by P.L. 98-613.

**APPORTIONMENT OF FEDERAL FUNDS BY
STATE AND AUTHORIZATION**

Distribution of Federal funds to the States and others under the National Marine Fisheries Service grant-in-aid for fisheries program (Public Law 88-309 and Public Law 89-304) in Fiscal Year 1986, is given in the following tabulation: Cumulative total reflects funding since inception of the Programs.

STATE AND OTHERS	FY 1986		CUMULATIVE TOTAL		GRAND TOTAL
	P.L. 88-309	P.L. 89-304	P.L. 88-309	P.L. 89-304	
			(\$1,000)		(\$1,000)
ALABAMA	\$ 152,200	\$ 18,200	\$ 4,013.2	\$ 853.2	\$ 4,866.4
ALASKA	244,000	470,000	5,256.0	9,128.0	14,384.0
ARIZONA	20,400	-	438.4	-	438.4
ARKANSAS	32,400	-	610.4	-	610.4
CALIFORNIA	244,000	407,000	5256.0	6,337.0	11,595.0
COLORADO	20,400	-	438.4	-	438.4
CONNECTICUT	20,400	50,000	638.4	550.0	1,188.4
DELAWARE	34,100	-	606.1	84	690.1
FLORIDA	244,000	-	5408.0	91	5,499.0
GEORGIA	63,000	24,600	1790.0	165.6	1,955.6
HAWAII	32,300	-	703.3	-	703.3
IDAHO	20,400	-	557.4	-	557.4
ILLINOIS	20,400	-	450.4	21	471.4
INDIANA	20,400	-	438.4	-	438.4
IOWA	20,400	-	440.4	-	440.4
KANSAS	20,400	-	440.4	-	440.4
KENTUCKY	20,400	-	440.4	-	440.4
LOUISIANA	244,000	-	8331.0	89	8,420.0
MAINE	164,400	69,000	3927.4	961.0	4,888.4
MARYLAND	112,200	93,051	3894.2	1,392.1	5,286.3
MASSACHUSETTS	244,000	40,000	6222.0	1,339.0	7,561.0
MICHIGAN	20,400	15,000	909.4	569.0	1,478.4
MINNESOTA	20,400	-	528.4	23.0	551.4
MISSISSIPPI	225,700	28,000	4260.7	468.0	4,728.7
MISSOURI	20,400	-	464.4	20	484.0
MONTANA	20,400	-	438.4	-	438.4
NEBRASKA	20,400	-	440.4	-	440.4
NEVADA	20,400	-	438.4	-	438.4
NEW HAMPSHIRE	22,400	-	654.4	1,318.0	1,972.4
NEW JERSEY	82,900	25,000	2637.9	262.0	2,899.9
NEW MEXICO	20,400	-	440.4	-	440.4
NEW YORK	76,200	255,400	2947.2	638.5	3,585.7
NORTH CAROLINA	79,200	36,500	1395.2	1,005.1	2,396.7
NORTH DAKOTA	20,400	-	438.4	-	438.4
OHIO	20,400	-	1079.4	96	1,175.4
OKLAHOMA	20,400	-	440.4	-	440.4
OREGON	59,200	516,000	2611.2	8,454.0	11,065.2
PENNSYLVANIA	84,600	-	1576.6	75	1,651.0
RHODE ISLAND	57,500	83,700	658.5	344.7	1,003.2
SOUTH CAROLINA	20,400	57,700	620.4	532.7	1,153.1
SOUTH DAKOTA	20,400	-	438.4	-	438.4
TENNESSEE	20,400	-	440.4	-	440.4
TEXAS	244,000	-	5909.0	-	5,909.0
UTAH	20,400	-	438.4	-	438.4
VERMONT	20,400	-	438.4	-	438.4
VIRGINIA	157,300	189,586	4345.3	1,943.6	6,288.9
WASHINGTON	147,200	516,500	3727.2	12,800.5	16,527.7
WEST VIRGINIA	20,400	-	438.4	-	438.4
WISCONSIN	20,400	33,000	460.4	429.0	889.4
WYOMING	20,400	-	438.4	-	438.4
AMERICAN SAMOA	143,800	-	2161.8	-	2,161.8
GUAM	20,400	-	438.4	-	438.4
PUERTO RICO	244,000	-	5167.0	-	5,167.0
VIRGIN ISLANDS	20,400	-	440.4	-	440.4
TTPI ^{1/}	20,400	-	220.4	-	220.4
NO. MARIANAS	20,400	-	182.4	-	182.4
PMFC ^{2/}	-	67,500	-	458.5	458.5
N.W. INDIAN TRB.	-	-	-	223.0	223.0
ASMFC ^{3/}	-	60,000	-	212.0	212.0
NMFS NE Center	-	75,281 ^{5/}	-	-	-
TOTAL	4,067,000	\$3,131,000 ^{4/}	98,965 ^{6/ 7/}	50,184.5	149,844.5 ^{6/ 7/}

- ^{1/} Trust Territory of the Pacific Islands
^{2/} Pacific Marine Fisheries Commission
^{3/} Atlantic States Marine Fisheries Commission
^{4/} Includes administrative costs and contracts for Striped Bass Stock Identification
^{5/} Includes Emergency Striped Bass Study Projects
^{6/} Includes 4(b) disaster assistance funds
^{7/} Totals may not add due to rounding

CLASSIFICATION OF FEDERAL AND STATE FUNDS
BY ACTIVITY AND AUTHORIZATION

FISCAL YEAR 1986

Program activities cover various fields, including broad categories of research and development of commercial fisheries and conservation, development and enhancement of anadromous fishery resources. The majority of the funds, 91.5 percent, were used for research in such areas as the environment, freshwater finfish, marine finfish, and shellfish; the remaining funds combined, accounted at 8.5 percent, were used for collection of statistics; extension services; aquaculture, and other program activities. Funding figures shown include both State and Federal dollars for all 1986 project segments.

Activity	Public Laws		Total	
	88-309 (\$1,000)	89-304 (\$1,000)	Dollars (\$1,000)	Percent (Total)
<u>Aquaculture</u>	334.9	137.2	472.1	1.9%
<u>Construction</u>	0	80.0	80	0.3
Fish screens and stream improvement facilities	-	80.0	80	
Fisheries development and enhancement	0	-	0	0
<u>Coordination</u>	27.0		27	0.1
<u>Disease and parasite control</u>	165.4	-	165.4	0.7
<u>Extension service</u>	443.8	-	443.8	1.8
<u>Market development</u>	0	-	0	0
<u>Operation and maintenance</u>	-	-	-	0
<u>Research</u>	15,503.2	7,006.9	22,510.1	91.5
Fisheries Surveys				
Environment	416.0	-	416.0	
Finfish (Freshwater)	2,053.7	66.0	2,119.7	
Finfish (Marine or Anadromous)	7,723.5	6,940.9	14,664.4	
Shellfish (includes Disaster assistance)	5,310.0	-	5,310.0	
<u>Statistics</u>	906.0	-	906	3.7
TOTAL	18,259.3	7,224.1	24,604.4	100.0%

PROJECT TITLES BY STATE AND PUBLIC LAW

WITH OTHER PERTINENT INFORMATION

FISCAL YEAR 1986

All 50 states, the Commonwealths of Puerto Rico and the Northern Mariana Islands, the Governments of American Samoa, Guam, the Virgin Islands, and the Trust Territory of the Pacific Islands, and certain Northwest Indian tribes are participating in the program under one or both authorizations. In FY 1986, 40 projects were completed at an estimated total cost (State and Federal dollars combined) of \$17,912,047; 119 projects were initiated or are continuing at an estimated cost of \$31,756,281. For all Public Law 88-309 projects completed or continued in FY 1986, the Federal share was 86 percent; the state share was 14 percent. For all Public Law 89-304 projects completed and continued the federal share was 60 percent; the state share was 40 percent.

Tabulation of completed and continuing projects including total cost follows:

Public Law	<u>Completed Projects</u>		<u>Continued Projects</u>		<u>Total Projects</u>	
	Number	Total Cost	Number	Total Cost	Number	Total Cost
		\$		\$		\$
88-309	28	7,707,330	81	24,048,951	109	31,756,281
89-304	12	10,204,717	26	16,836,555	38	27,041,272
TOTAL	40	17,912,047	107	40,885,506	147	58,797,553

A list of continuing projects and those completed in 1986, under each authorization by State, including duration, date completed, and page reference for project narrative, is tabulated on pages 5 through 20. Under Public Law 88-309, project numbers identify the Region administering the project by the first digit, project number sequence within the Region by next digit(s), followed by a letter to denote activity as R-research, C-construction, D-development, and S-coordination. Under Public Law 89-304, the first two letters, "AF" identify the project as anadromous fish, with next letter "C" for projects administered by NMFS, or "CS" for those jointly funded projects with U.S. Fish and Wildlife Service (FWS) with NMFS as lead agency, and "SC" for jointly funded projects with FWS as lead agency, followed by a number sequence within each State.

Public Law	Project number and title	Date initi- ated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
	<u>ALABAMA</u>					
88-309	2-421-R Research and management of Alabama coastal fisheries	1985	3	F-423,000 S-141,000		34
	2-423-D(4b) Restoration of oyster resource lost during a natural disaster	1986	1	F-1,399,000 S- 0		38
89-304	AFC-31 Nutrition studies for increasing production of striped bass finger- lings	1986	5	F-100,000 S-100,000		32
	<u>ALASKA</u>					
88-309	5-51-R Pacific herring research - S.E. Alaska	1982		F-370,000 S-271,600	1986	30
	5-52-R Southeastern Alaska groundfish monitoring	1985	1	F-80,000 S-37,600	1986	30
	5-54-R Southeast Alaska groundfish and herring resources	1986	5	F- 94,300 S-124,100		30
89-304	AFC-67 Microwire tagging of wild coho salmon stocks	1981	5	F-517,500 S- 0	1986	31
	AFC-70 Southeastern Alaska sockeye salmon stock apportionment studies	1982	5	F-280,800 S-286,200	1986	31
	AFC-71 Southeastern Alaska pink and chum studies	1982	5	F-592,100 S-641,300	1986	31
	AFC-72 Southeastern Alaska port sampling	1982	5	F-779,600 S-589,400	1986	31
	AFC-75 Anadromous salmon resource in Southeast Alaska	1986	5	F-490,400 S-490,500		31

Public Law	Project number and title	Date initiated	Duration	Estimated total cost	Date completed	Project narrative
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>AMERICAN SAMOA</u>						
88-309	4-67-D	Deployment of FAD system in American Samoa	1984	3	F-95,000 S- 0	22
<u>ARIZONA</u>						
88-309	4-75-D	Fish disease and parasite training	1985	3	F-6,525 S-2,175	22
	4-76-D	Assessment of flathead catfish	1985	3	F-33,750 S-11,250	26
<u>ARKANSAS</u>						
88-309	2-371-R	Commercial fishery survey	1980	6	F-165,348 S- 55,116	1986 26
	2-432-R	Commercial fisheries survey	1986	3	F-80,700 S-26,900	26
<u>ATLANTIC STATES MARINE FISHERIES COMMISSION</u>						
89-304	AFC-2	Reevaluation of interstate striped bass conservation and management planning activities	1985	2	F-42,000 S-21,000	32
	AFC-3	Emergency striped bass study workshops	1985	1	F-15,000 S- 0	33
	AFC-4	Research and analysis supporting interstate management of shad and river herring	1986	1	F-45,000 S-22,500	29
<u>CALIFORNIA</u>						
88-309	4-62-D	Southern California commercial fisheries assessment	1983	3	F-0 S-0	1986 34
	4-73-D	Fisheries monitoring and assessment, 85-87	1985	2	F-0 S-0	34

Public Law	Project number and title	Date initi- ated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
	4-79-D Southern California commercial fisheries assessment	1986	2	F-295,384 S- 98,462		34
89-304	AFC-18 Salmon and steelhead assessment	1985	1	F-582,169 S-582,169	1986	31
	AFC-19 Salmon research and management	1986	1	F-407,000 S-407,000		32
<u>COLORADO</u>						
88-309	1-169-R Warm-water fish culture	1983	5	F-102,800 S- 34,300		21
<u>CONNECTICUT</u>						
88-309	3-374-R Connecticut lobster investigations	1982	5	F-102,161 S-102,161		37
89-304	AFC-15 Population dynamics studies of American shad in the CT River	1984	3	F-150,000 S-150,000		29
<u>DELAWARE</u>						
88-309	3-358-D Technical assistance to commercial fisheries	1982	5	F-183,400 S- 61,134		23
<u>FLORIDA</u>						
88-309	2-405-D Fisheries extension and marketing services program	1983	4	F-700,000 S-233,333		23
	2-407-D Oyster cultivation by reef construction and oyster transplanting program	1983	4	F-100,000 S- 33,333		39
	2-408-R Florida's marine resources research, development and management program	1983	5	F-500,000 S-166,666		34
	2-425-D(4b) Restoration of oyster resource impacted by Hurricane Elena	1986	1	F-1,472,000 S- 0		38

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>GEORGIA</u>						
88-309	2-424-R	Studies and assessments of Georgia's marine fisheries resources	1986	3	F-241,500 S- 80,500	35
89-304	AFC-29	Assessment and bio- telemetry studies of Atlantic sturgeon in Georgia	1985	3	F-86,000 S-86,000	30
<u>GUAM</u>						
88-309	4-58-D	Development of polyculture fish farming	1982	4	F-82,500 S-35,196	21
<u>HAWAII</u>						
88-309	4-57-D	Seaweed investigations	1982	4	F-152,100 S- 62,100	1986 21
	4-77-D	Taape market development	1985	2	F-17,000 S-17,000	24
	4-80-D	Upgrading Hawaii commercial fisheries information system	1986	1	F-58,007 S-19,336	40
<u>IDAHO</u>						
88-309	1-171-R	Proliferative kidney disease in salmonids	1983	3	F-82,500 S-27,500	1986 23
	1-186-R	Antisera production for identification of fish pathogens	1986	2	F-41,400 S-13,800	23
<u>ILLINOIS</u>						
88-309	3-373-R	Effects of fleeting areas on mussel beds	1982	6	F- 82,931 S-110,575	38

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
	<u>INDIANA</u>					
88-309	3-387-R Selected character- istics of the yellow perch stock in Indiana waters of Lake Michigan	1983	4	F-84,318 S-75,429		25
	<u>IOWA</u>					
88-309	2-414-R Intensive culture of fishes with potential commercial importance to Iowa	1984	3	F-65,000 S-21,667		26
	<u>KANSAS</u>					
88-309	2-401-R Kansas marketable fisheries investigation	1983	3	F-66,000 S-22,000	1986	41
	2-430-R Kansas marketable fisheries investigation	1986	3	F-50,700 S-16,900		41
	<u>KENTUCKY</u>					
88-309	2-418-R Commercial fishery resource survey-Kentucky Lake	1985	1	F-22,500 S- 7,500	1986	39
	2-429-R Exploitation rates, movements & popula- tion size of commercial species at Kentucky Lake	1986	2	F-16,900 S- 5,633		39
	<u>LOUISIANA</u>					
88-309	2-412-R Assessment & manage- ment of Louisiana's coastal fisheries	1984	3	F-720,000 S-240,000		26
	<u>MAINE</u>					
88-309	3-370-R Lobster stock assessment	1982	4	F-287,992 S-287,993	1986	38

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive	
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>	
	3-378-R	Early life histories of commercial shrimp and fish	1983	3	F-169,994 S-169,994	1986	35
	3-396-D	Collection of landings data and biological sampling of commercial fisheries	1984	3	F-50,008 S-50,009		41
	3-407-R	Lobster stock assessment	1985	3	F-369,500 S-369,500		38
	3-410-R	Transboundary herring studies	1986	3	F-204,662 F-204,662		29
89-304	AFC-24	Androscoggin River shad restoration, Maine	1982	4	F-150,447 S-150,447	1986	
	AFC-25	Population biology of the alewife	1983	3	F-44,478 S-44,479	1986	28
	AFC-26	Kennebec River anadromous fish restoration and evaluation	1985	3	F-106,750 S-106,750		29
	AFC-27	Androscoggin River anadromous fish enhancement	1986	3	F-182,500 S-182,500		29
<u>MARYLAND</u>							
88-309	3-345-D	Maryland fisheries statistics	1980	6	F-554,217 S-554,217	1986	42
	3-413-D	Maryland fisheries statistics	1986	1	F-93,200 S-93,200		41
	3-419-R	Monitor shellfish disease and mortality in Chesapeake Bay.	1986	1	F-54,845 S-54,845		23
89-304	AFC-11	Striped bass research, Maryland (emergency striped bass research study)	1980	6	F-330,615 S-133,369	1986	33
	AFC-14	Anadromous fish research, Maryland	1983	3	F-143,047 S-143,047	1986	35

Public Law	Project number and title	Date initi- ated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
	AFC-15	Maryland striped bass investigation	1986	1	F-110,929 S- 72,673	33
<u>MASSACHUSETTS</u>						
88-309	3-371-D	Collection, compilation, evaluation, and dissemination of Massachusetts fishery statistics	1982	4	F-132,038 S- 58,150	1986 42
	3-375-R	Massachusetts fishery resource assessment	1983	3	F-261,381 S-261,381	1986 35
	3-404-D	Commercial fisheries technology and com- munications program	1985	3	F-321,530 S-177,241	24
	3-409-R	Massachusetts fishery resource assessment	1986	3	F-316,300 S-316,300	35
	3-416-D	Fisheries statistics and automated data processing	1986	3	F-212,110 S-255,005	42
89-304	AFC-19	Anadromous fisheries management	1981	5	F-213,036 S-213,036	1986 22
	AFC-20	Characterization of Massachusetts striped bass landings (emergency striped bass research study)	1984	2	F- 38,400 S- 4,267	1986 33
	AFC-21	Anadromous fisheries management	1986	5	F-200,000 S-200,000	22
<u>MICHIGAN</u>						
88-309	3-384-R	Assessment of whitefish populations in the treaty area of Lake Michigan	1983	4	F-82,000 S-34,000	26
89-304	AFC-15	Evaluation of anadromous fish gilling mortality in trap nets	1984	4	F-60,000 S-60,000	35

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>MINNESOTA</u>						
88-309	3-393-R Lake Superior commercial fisheries assessment studies	1984	3	F-39,375 S-13,125		27
<u>MISSISSIPPI</u>						
88-309	2-415-R Experimental evaluation of sodium ricinoleate as an agent for the prevention of blue-green algal blooms & their off-flavor in commercial catfish ponds	1984	3	F-200,985 S- 66,995		21
	2-422-R Mississippi Gulf Coast fisheries monitoring and assessment program	1985	3	F-420,000 S-140,000		36
89-304	AFC-24 Mississippi and Alabama cooperative striped bass restoration program	1983	3	F-183,000 S- 91,503 (includes FWS share)	1986	
	AFC-30 Mississippi and Alabama cooperative striped bass restoration program	1986	3	F-91,500 S-45,750		21
<u>MISSOURI</u>						
88-309	2-416-R Research and management of Missouri's commercial fisheries resource	1984	5	F-150,000 S- 50,000		27
89-304	AFC-1 Parasites of anadromous alosids as biological tags	1985	1	F-19,992 S-19,992	1986	23
<u>MONTANA</u>						
88-309	1-162-R Development and management of commercial fishing practices	1982	6	F-122,900 S- 37,400		27

Public Law	Project number and title	Date initi- ated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>NEBRASKA</u>						
88-309	2-402-R	Nebraska commercial fishery investigations	1983	5	F-112,382 S- 37,461	24
<u>NEVADA</u>						
88-309	4-74-D	Aquaculture in geothermal water	1985	2	F-27,500 S- 9,167	21
<u>NEW HAMPSHIRE</u>						
88-309	3-414-D	Improvement of American oyster <u>Crassostrea</u> <u>virginica</u> beds in the Great Bay estuary	1986	1	F-22,400 S- 7,407	39
89-304	AFC-6	Anadromous fish propagation	1983	3	F-220,000 S-220,000	1986 24
<u>NEW JERSEY</u>						
88-309	3-388-D	Marine fishermen's coordination project	1983	3	F-75,835 S-25,315	1986 22
	3-405-R	Inventory of New Jersey's estuarine shellfish resources	1985	5	F-303,910 S-303,910	40
	3-406-R	Life history investi- gations of marine fish	1985	3	F-74,250 S-24,750	36
	3-415-D	Marine fishermen's coordination project	1986	3	F-40,200 S-13,400	22
89-304	AFC-9	Anadromous herring run restoration	1985	1	F-20,000 S-20,000	1986 28
	AFC-10	Anadromous herring run restoration	1986	1	F-25,000 S-25,000	28

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>NEW MEXICO</u>						
88-309	2-366-R	Intensive harvest of commercial species	1980	5	F-124,300 S- 41,433	1986 27
	2-431-R	Impacts of commercial fish harvest	1986	3	F-53,093 S-17,698	42
<u>NEW YORK</u>						
88-309	3-394-S	Coordination IV	1984	2	F-39,383 S-39,383	1986 22
	3-395-R	Monitoring commercial lobster catch in Long Island Sound	1984	3	F-11,300 S-11,300	1986 38
	3-402-R	Assessment of New York's shellfish resources III	1985	3	F-30,000 S-30,000	1986 40
	3-403-D	Sanitary examination of shellfish lands	1985	3	F-172,665 S-172,665	40
89-304	AFC-13	A study of the striped bass in the Marine District of New York State V	1985	3	F-382,400 S-210,500	33
<u>NORTH CAROLINA</u>						
88-309	2-419-R	North Carolina commercial finfish assessment	1985	3	F-292,700 S- 97,567	36
89-304	AFC-27	North Carolina alosid management project	1985	3	F-125,000 S-125,000	28
	AFC-28	Canadian river herring and striped bass project	1985	2	F-38,000 S-38,000	1986 28

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narrative
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>NORTHERN MARIANAS</u>						
88-309	4-78-D Marianas data collection 86-87	1986	1	F-22,500 S- 6,000		42
<u>OHIO</u>						
88-309	3-379-R Ecology of yellow perch in Lake Erie	1983	4	F-214,800 S- 71,600		25
<u>OKLAHOMA</u>						
88-309	2-410-R Oklahoma commercial fisheries program	1984	5	F-125,000 S- 41,667		27
<u>OREGON</u>						
88-309	1-174-R Squid resource assessment	1984	4	F-148,100 S- 49,400		36
	1-180-R Groundfish and shrimp stock assessment	1984	2	F-186,600 S- 62,200	1986	36
	1-185-R Groundfish stock assessment; discard study	1986	2	F-81,900 S-27,300		30
89-304	AFC-127 Research and development of Oregon's coastal salmon stocks	1984	5	F-975,000 S-975,000		32
	AFC-130 Joint Oregon-Washington multijurisdictional salmon management program	1984	5	F-2,200,000 S-1,100,000		32
<u>PACIFIC MARINE FISHERIES COMMISSION</u>						
89-304	AFC-126 Regional mark processing center	1984	5	F-333,900 S-167,000		32
<u>PENNSYLVANIA</u>						
88-309	3-397-R Assessment of yellow perch in Pennsylvania waters of Lake Erie	1985	5	F-432,951 S-144,317		26

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>PUERTO RICO</u>						
88-309	2-395-R	Puerto Rico commercial fisheries research and development program	1983	3	F-780,572 S-260,190	36
	2-428-R	Puerto Rico commercial fisheries research and development program	1986	5	F-1,324,000 S- 441,333	36
<u>RHODE ISLAND</u>						
88-309	3-400-R	Examination of bay scallop (<u>Argopecten irradians</u>) reproductive cycles	1984	3	F-90,000 S-90,000	39
	3-408-R	Coastal fishery resource assessment	1986	2	F-90,900 S-30,300	37
89-304	AFC-4	Striped bass stock assessment in Rhode Island waters (emergency striped bass research study)	1981	4	F-116,800 S- 44,089	33
<u>SOUTH CAROLINA</u>						
88-309	2-426-D	Development of subtidal hard clam population in coastal SC	1986	1	F-30,147 S-10,049	37
88-304	AFC-26	Monitoring of the commerical shad fishery & Investigations of under-utilized components of South Carolina's anadromous fish resources	1985	2	F-111,500 S-111,500	28
<u>SOUTH DAKOTA</u>						
88-309	1-173-R	Abundance and distribution of rainbow smelt in Oahe Reservoir	1983	5	F-113,100 S- 53,200	27

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>TENNESSEE</u>						
88-309	2-420-R Commercial mussel resource management	1985	2	F-45,000 S-15,000		38
<u>TEXAS</u>						
88-309	2-400-R Texas commercial fisheries management program	1983	3	F-787,985 S-263,328	1986	40
	2-427-R Texas commercial fisheries management program	1986	5	F-1,220,000 S- 406,666		37
<u>TRUST TERRITORY OF THE PACIFIC ISLANDS</u>						
88-309	4-55-D Truk Lagoon small purse seine demonstration	1982	4	F-57,000 S-19,000	1986	37
	4-69-D Regional standardization of catch data	1984	3	F-55,100 S-13,367		42
	4-81-D Palau reef fish subsistence catch	1986	1	F-15,100 S- 7,500		42
<u>UTAH</u>						
88-309	1-181-R Susceptibility to para- sitism of rainbow trout	1984	2	F-17,800 S- 6,200	1986	23
	1-182-R Inspection and disease certification of commercial fish hatcheries	1984	4	F-76,400 S-25,500		23
<u>VERMONT</u>						
88-309	3-399-R Current status and effects of commercial fishing on American eel populations in Lake Champlain, Vermont	1984	2	F-38,684 S-14,365	1986	25

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
	3-420-R Assessment of the winter smelt fishery on Lake Champlain	1987	2	F-42,039 S-14,013		25
<u>VIRGIN ISLANDS</u>						
88-309	2-411-R Virgin Islands commercial fisheries research & develop- ment project	1984	5	F-117,500 S- 14,167		37
<u>VIRGINIA</u>						
88-309	3-361-D Fisheries resource statistics and information systems	1982	5	F-579,300 S-193,099		42
	3-417-D Commercial fisheries statistics information systems	1987	1	F-130,700 S- 43,567		42
	3-421-R The assessment of commercial fishing effort in Virginia	1986	1	F-26,600 S- 8,868		42
88-304	AFC-13 Study of <u>Alosa</u> stock composition and year class strength in VA	1984	3	F-236,700 S-236,700		28
	AFC-16 A study of the striped bass commercial fisheries in the Rappahannock River, VA (emergency striped bass research study)	1984	1	F-63,599 S-29,083	1986	33
	AFC-17 Virginia juvenile striped bass monitoring program (emergency striped bass research study)	1984	1	F-58,001 S- 6,405	1986	34
	AFC-18 Striped bass research in Virginia	1986	1	F-239,568 S- 79,749		34

Public Law	Project number and title	Date initiated	Dura- tion	Estimated total cost	Date com- pleted	Project narra- tive
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
<u>WASHINGTON</u>						
88-309	1-167-R Coastal dungeness crab project	1983	5	F-164,100 S- 54,700		37
	1-168-R South coast marine fish/ shellfish monitoring	1983	6	F-114,000 S- 38,000		40
	1-170-R Marine fish management and stock assessment	1983	5	F-305,900 S-102,000		30
	1-183-R Coastal pink shrimp management and investigations	1985	3	F-88,700 S-29,600		39
	1-184-R Central coast groundfish monitoring	1985	3	F-60,200 S-20,100		
89-304	AFC-128 Joint Washington-Oregon multijurisdictional salmon management program	1984	5	F-3,300,000 S-1,650,000		32
	AFC-129 Quantitative analysis support	1984	3	F-62,200 S-62,200		32
<u>WEST VIRGINIA</u>						
88-309	3-372-R Commercial fishery investigations	1982	5	F-33,750 S-11,250		27
	3-380-R Investigation of commercial in- vertebrate bait harvest	1983	3	F-58,500 S-31,371	1986	40
	3-418-D Development of an Ohio River Commercial Fisheries Atlas	1987	1	F-34,800 S-17,658		24
<u>WISCONSIN</u>						
88-309	3-382-R Management of a quota controlled commercial chub fishery	1983	4	F-83,500 S-27,834		27

Public Law	Project number and title	Date initiated	Duration	Estimated total cost	Date completed	Project narrative
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>	<u>Page</u>
89-304	AFC-16	Assess walleye populations in Green Bay, Lake Michigan	1983	4	F-161,000 S-161,000	24
<u>WYOMING</u>						
88-309	1-172-R	Commercial fishery development extension services	1983	5	F-79,500 S-27,400	24
	1-187-R	Evaluation of the bait-fish industry	1984	5	F-23,400 S- 7,800	25

PROGRAM ANALYSIS

For program analysis, projects are grouped under the type of activity undertaken rather than by State or Public Law. In doing so, the reader has all projects for the 1986 segment of the program, such as construction, coordination, or research, in one section.

Under each type of activity included are project identification, principal investigator, and 1986 project segment cost, State and Federal. If projects were continued or completed in 1986 with prior year funds, no cost is indicated below.

Request for additional information about a project or for reprints of reports resulting from the work should be made to the appropriate NMFS Regional Office, State agency, or Cooperator. The Regional Offices, State agencies, and Cooperators, including addresses are listed on pages 50-55.

AQUACULTURE

Colorado 1-169-R	Stephen A. Flickinger	F-21,399 S- 7,133
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Warmwater fish culture - Determine the effects of stock density and feed control on the growth of bluegill fingerlings.

Guam 4-58-D	Harry Kami	F-16,400 S- 0
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Development of polyculture fish farming - Increase efficiency and expand production of local aquaculture farms.

Hawaii 4-57-D	Maxwell Doty	F-0 S-0
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Seaweed investigations - Develop procedure and determine economic feasibility of reestablishing Gracilaria in depleted areas of Hawaii.

Mississippi 2-415-R	Richard Leard	F-200,985 S- 66,995
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Sodium ricinoleate evaluations - Experimental evaluation of Sodium Ricinoleate as an Agent for the prevention of blue-green algal blooms and their off-flavor in commercial catfish ponds.

Mississippi AFC-30	Larry C. Nicholson	F-91,500 S-45,750
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Mississippi/Alabama cooperative striped bass restoration program - Restore the striped bass population in the Gulf of Mexico Coastal area of the states of Alabama and Mississippi by annual stocking of advanced striped bass fingerlings.

Nevada 4-74-D	Robert L. Taylor	F-16,500 S- 5,500
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Aquaculture in Geothermal Water - Determine the feasibility of culturing aquatic species in geothermal water sources, primarily channel catfish and freshwater prawns.

CONSTRUCTION

Fisheries Development and Enhancement

American Samoa	4-67-D	Henry Sesepasara	F-0 S-0
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Deployment of FAD system in American Samoa - Construction and deployment of nine fishery aggregation devices.

Fish Screens and Stream Improvement Facilities

Massachusetts	AFC-19	Joseph DiCarlo	Completed 1986
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Anadromous fisheries management - Maintain and enhance existing populations, restore historically important populations and establish new populations of anadromous fish, through constructions of fish passage facilities.

Massachusetts	AFC-21	Joseph DiCarlo	F-40,000 S-40,000
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Anadromous fisheries management - A program which maintains and enhances existing populations, restores historically important populations and establishes new populations of anadromous fish, through transplants and construction of fish passage facilities. Emphasis will also be given to biological evaluation of restoration efforts and a survey of Atlantic and shortnose sturgeon populations in the Merrimack River.

COORDINATION

New Jersey	3-388-D	John Makai	Completed 1986
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Marine fishermen's coordination project - Provide communications pathway between commercial fishermen, processors, dealers, and New Jersey fisheries management agencies; address current concerns and needs of the commercial fishing industry which generates \$170 million to the state's economy.

New Jersey	3-415-D	John Makai	F-20,400 S- 6,800
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Marine fishermen's coordination project - Provide communications pathway between New Jersey commercial fishermen, processors, dealers and New Jersey fisheries management agencies, which addresses current concerns and needs of the commercial fishing industry.

New York	3-394-S	Sammuel L. Finkelstein	Completed 1986
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Coordination IV - Provide administrative support to New York's P.L. 88-309 program.

DISEASE AND PARASITE CONTROL

Arizona	4-75-D	Warner B. Poppleton	F-0 S-0
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Fish disease and parasite training - Provides training of laboratory biologist providing diagnostic and certification services to statewide aquaculture and fish import interests.

Idaho 1-171-R George Klontz Completed 1986

Proliferative kidney disease in salmonids - Detect and isolate the organism causing PKD and evaluate several treatment regimes.

Idaho 1-186-R Vern Winston F-21,400
A. Kent Hauck S- 7,134

Antisera production for the identification of fish pathogens - Produce antiserum for use in the identification of the IHN virus in Idaho.

Maryland 3-419-R Howard J. King, III F-54,845
S-54,845

Monitor shellfish disease and mortality in Chesapeake Bay -Determine the geographical distribution and intensity of infection for shellfish diseases, particularly those for oysters. Collect and examine suspect shellfish for presence of disease and make recommendations which would facilitate the production of seed and growth of oysters in areas that offer the least risk.

University of Missouri AFC-1 Leslie S. Uhazy Completed 1986

Parasites of anadromous alosids as biological tags - Identify helminthic and crustacean parasites which occur in or on the juvenile stages of Amercian shad, blueback herring and alewife over their distribution in the Atlantic Ocean from Cape Hatteras to the Gulf of Maine-Bay of Fundy system. Data will be evaluated to ascertain patterns which may reflect fish stock origin and migratory patterns. The results will also address critical data requirements necessary for the effective management of these fisheries.

Utah 1-181-R Charles Berry Completed 1986

Susceptibility to parasitism of rainbow trout - Evaluate the susceptibility of different genetic strains of rainbow trout and stocked Utah suckers to Lernaea cyprinacea.

Utah 1-182-R Ronald Goede F-20,400
S- 6,800

Inspection and disease certification of commercial fish hatcheries - Inspect commercial trout hatcheries and monitor ovarian fluid for viral pathogens during egg-taking operations, and develop pathogen elimination program.

EXTENSION SERVICE

Delaware 3-358-D Charles A. Lesser F-35,176
S-12,427

Technical assistance to commercial fisheries - Provide technical assistance to commercial fishermen, seafood industries, and government authorities on management, enforcement, and dissemination of data to improve management and economics of Delaware's commercial fisheries industries.

Florida 2-405-D Charles C. Thomas F-157,149
S- 52,383

Create and develop educational materials for use in training- Create a greater demand for seafood. Enhance public image of mullet, Spanish mackerel, rock shrimp, shark, croaker, squid, dolphin, etc., introduce and encourage the purchase of same. Provide industry with technical assistance and market development. Increase economic impact to State by increasing new markets throughout the United States.

Commercial fisheries technology and communications program - Implement a consolidated approach to provide services to the commercial fishing and seafood industries by keeping the industrial sectors aware of fisheries management considerations/strategies, assessing the reaction or concerns of industry and the public, and collecting detailed data to better acquaint managers of potential problems. Particular emphasis is given to study on gear selectivity and impact as well as to increasing the public's awareness of quality regional fish products.

Wyoming 1-172-R

Wayne Hubert

F-36,000

S-12,800

Commercial fisheries development extension services - Obtain and disseminate information on commercial fishery operations in Wyoming and develop programs for utilization of carp, sucker, and bait minnow populations in Wyoming reservoirs and streams.

MARKET DEVELOPMENT

Hawaii 4-77-D

Alvin Katekaru

F-0

S-0

Taape market development - Determine potential market for taape (Lutjanus kasmira) in Hawaii, a common underutilized bottomfish.

OPERATION AND MAINTENANCE

New Hampshire AFC-6

Peter E. Brezosky

Completed 1986

Anadromous fish propagation - Hatch and rear approximately 320,000 anadromous salmonids to accommodate fish cultural needs for the restoration of Atlantic salmon to the Merrimack River Basin and to generate a coastal recreational fishery for coho salmon and sea-run brown/rainbow trout.

RESEARCH

FINFISH

Freshwater:

Nebraska 2-402-R

Gene Zuerlein

F-49,082

S-16,361

Nebraska commercial fishery investigations - To manage the commercial fishery permit system and to compile and analyze the reported production and catch statistics.

West Virginia 3-418-D

Larry A. Nielsen

F-17,400

S- 8,829

Development of an Ohio River commercial fisheries atlas - Compile, through an intensive cooperative venture, all available data pertaining to the commercial fisheries for West Virginia waters of the Ohio River. Information collected will be summarized by development of an atlas (habitat maps) and through critical assessment of environmental and fisheries management concerns.

American eel

Vermont 3-399-R

George W. LaBar

Completed 1986

Current status and effects of commercial fishing on American eel populations in Lake Champlain, Vermont - Determine size, age structure, and growth rates of American eel populations in Keeler and Converse Bays, and determine impact of commercial fishery on the Keeler Bay population.

Rainbow smelt:

Vermont 420-R

George W. LaBar

F-25,836

S- 8,612

Assessment of the winter smelt fishery on Lake Champlain - Determine the magnitude and character of the commercial winter smelt fishery on Lake Champlain. Data gathered will include retail information, as well as catch rate, age, growth and sex parameters of rainbow smelt (*Salmo gairdneri*). Results will be used to help evaluate the effectiveness of the Strategic Plan for Development of Salmonid Fisheries in Lake Champlain.

Baitfish:

Wyoming 1-187-R

Stanley Anderson

F-23,400

Lynn Noel

S- 7,800

Evaluation of the bait-fish industry in Wyoming - Collect information on the species of bait-fish harvested in Wyoming and the utilization and value of the fish harvested.

Walleye:

Wisconsin AFC-16

Lee Kernen

F-33,000

S-33,000

Assess walleye populations in Green Bay, Lake Michigan - Maintain, through a stocking and assessment program, an adult walleye standing stock of at least four per acre in Green Bay, while providing a sustained commercial harvest of 10,000 pounds or more annually in Lake Michigan.

Yellow perch:

Indiana 3-387-R

Thomas S. McComish

F-20,400

S-12,507

Selected characteristics of the yellow perch stock in Indiana waters of Lake Michigan - Determine abundance, age and growth, size at sexual maturity, food habits, and fecundity of yellow perch in Indiana waters of Lake Michigan.

Ohio 3-379-R

F. Joseph Margraf

F-16,925

S- 5,642

Ecology of yellow perch in Lake Erie - Determine whether management models for yellow perch in Lake Erie can be improved by examining the relative importance of food availability and temperature as factors causing differences in growth rates between western and central basin populations.

Assessment of yellow perch in Pennsylvania waters of Lake Erie - Predict numbers of yellow perch annually recruiting to the Lake Erie fishery and estimate optimum fishing mortality/corresponding yield per recruit to enable determination of appropriate management strategies.

Whitefish:

Michigan 3-384-R

R.W. Rybicki

F-16,900

S- 5,700

Assessment of whitefish populations in the treaty area of Lake Michigan - Monitor whitefish harvest in the commercial trapnet fishery, determine relative abundance of pre-recruits, and forecast the total allowable yield of whitefish in the treaty waters of Lake Michigan.

Others:

Arizona 4-76-D

Warner B. Poppleton

F-0

S-0

Assessment of Flathead Catfish - Assesses the standing stocks of flathead catfish in the lower Colorado, Gila, Salt, and Verde Rivers and determine effects of commercial fishing.

Arkansas 2-371-R

Tommie Crawford

Completed 1986

Commercial fishery survey - Gather data and compile information concerning the status of wild commercial fishery resources and evaluate regulations for commercial fishing.

Arkansas 2-432-R

Tommie Crawford

F-80,700

S-26,900

Commercial fisheries survey - Estimate value of and identify changing trends in the wild commercial fishery & aquaculture industries in Arkansas. Determine the value of fish farming industry. Gather basic life history data for use in managing paddlefish.

Iowa 2-414-R

Berneice Hostetler

F-65,000

S-21,667

Intensive culture of fishes with potential commercial importance to Iowa - To determine the effects of selected cryoprotectants, diluents, freezing rates, storage temperatures, storage times and thawing rates on the development, hatchability, and subsequent growth of channel catfish embryos, and determine the survival and growth of first feeding walleye fry and fingerlings fed selected formulated feeds under intensive rearing conditions.

Louisiana 2-412-R

Claude Boudreaux

F-720,000

S-240,000

Assessment and management of Louisiana's coastal fisheries - to maintain a coastwide program which monitors relevant parameters of economically important seafood resources.

Minnesota 3-393-R

John Spurrier

F-16,900

S-13,100

Lake Superior commercial fisheries assessment studies - Ascertain and monitor the status of the lake trout and commercial fish stocks in the Minnesota waters of Lake Superior. Project data will be analyzed to aid decision making in the rehabilitation and utilization of these resources.

Missouri 2-416-R

Timothy P. Grace

F-150,000

S- 50,000

Research and management of Missouri's commercial fisheries resources - To determine the number of commercial fishermen, pounds of fish harvested and the wholesale value of Missouri's river commercial fisheries; by gear type, county, and by river open to commercial fishing. Determine live-weight wholesale value.

Montana 1-162-R

William Wiedenheft

F-20,400

S- 6,800

Development and management of commercial fishing practices - Assess the commercial and gamefish species in Fort Peck reservoir.

New Mexico 2-366-R

Bob Patterson

F-24,401

S- 8,134

Intensive harvest of commercial species - Determine the effect of intensive harvest of white suckers on the fish populations in trout lakes.

Oklahoma 2-410-R

Mark Ambler

F-125,000

Hutchie Weeks

S- 41,667

Oklahoma commercial fisheries program - To monitor selected fish populations in lakes undergoing commercial harvest in Oklahoma and collect and analyze commercial fishery harvest results.

South Dakota 1-173-R

Gary Marrone

F-20,400

Paul Michaletz

S-19,802

Abundance and distribution of rainbow smelt in Oahe Reservoir - Obtain baseline data and develop management methodology using hydroacoustical sampling methods.

West Virginia 3-372-R

Fred Leckie

F-2,250

S- 750

Commercial fishery investigations - Administer and monitor the Ohio River commercial fishery in West Virginia.

Wisconsin 3-382-R

Lee Kernan

F-20,400

S- 6,803

Management of a quota-controlled commercial chub fishery - Determine the population parameters required to annually calculate harvest quotas for the Lake Michigan commercial chub fishery with the ultimate objective of sustaining a harvest of 4 million pounds per year by 1991.

FINFISH (MARINE OR ANADROMOUS)

Alewife and herring:

Maine AFC-25	C.J. Walton	Completed 1986
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Population biology of the alewife - Monitor parameters of the Damariscotta River alewife stock and develop a population model to evaluate priorities for alewife management.

New Jersey AFC-9	Donald Byrne	Completed 1986
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Anadromous herring run restoration - Continue identification and selection of coastal sites for restoration of anadromous clupeid populations. Sites will be chosen on the basis of their potential for increased production, estimated cost of restoration, and associated recreational fisheries.

New Jersey AFC-10	Donald Byrne	F-25,000 S-25,000
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Anadromous herring run restoration - Identify and evaluate New Jersey coastal watersheds on the basis of potential for enhancement and/or restoration of anadromous clupeid populations.

North Carolina AFC-27	Michael W. Street	F-125,000 S-125,000
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Determine relative abundance, growth, and distribution of juvenile alosid species. Estimate the annual commercial harvest and value of anadromous fishes in Albermarle Sound Area.

North Carolina AFC-28	Roger A. Rulifson	Completed 1986
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Canadian river herring and striped bass project - Tag river herring (alewife and blueback herring) and striped bass in the Bay of Fundy and analyze tag-return date to determine range/extent of U.S. stock migrations. It is anticipated that study data will be utilized to assist in formulating management decisions for these species on State, interstate, Federal, and international levels.

South Carolina AFC-26	Glenn Ulrich	F-111,500 S-111,500
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Monitoring shad fishery and investigation of underutilized anadromous resources - Collect data of catch/effort based, indices of abundance for American shad to monitor stock status in major river systems of South Carolina.

Develop and evaluate methods for obtaining sufficient quantities of American shad for tagging. Determine satisfactory methods for handling, tagging, and releasing the shad.

Virginia AFC-13	Joseph G. Loesch	F-70,000 S-70,000
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Study of Alosa stock composition and year class strength in Virginia - Collect harvest and biological data for analysis of alosid (alewife, American shad, and blueback herring) populations in Virginia coastal waters and evaluate annual relative abundance, growth, and mortality of juvenile Alosa stocks. Study results will contribute to the data base essential for the development of an interjurisdictional (multi-state) management plan for these fisheries.

American shad:

ASMFC AFC-4	Paul Perra	F-45,000
(Atlantic States Marine Fisheries Commission)		S-22,500

Research and analysis supporting interstate management of shad and river herring - Identify and assess research needs relative to the protection and restoration of anadromous alosids along the Atlantic seaboard. Due to the migratory nature of these species, study results will be jointly evaluated to promote an active interchange of ongoing research among the concerned state fisheries agencies. This exchange of information is essential in effectively monitoring the Interstate Fishery Management Plan for American Shad and River Herrings.

Connecticut AFC-15	Thomas Savoy	F-50,000
		S-50,000

Population dynamics studies of American shad in the Connecticut River - Monitor annual fluctuations in shad population size and commercial fishing mortality to appraise the current stock status, understand the causes of long-term population trends, and corroborate or refute current lines of research.

Maine AFC-24	Lewis N. Flagg	Completed 1986
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Androscoggin River shad restoration, Maine - Restore anadromous fish runs to the Androscoggin River, determine timing/magnitude/reproductive success of anadromous clupeid runs, and assess upstream fish passage efficiency.

Maine AFC-26	Thomas S. Squiers, Jr.	F-30,500
		S-30,500

Kennebec River anadromous fish restoration and evaluation - Determine abundance indices for juvenile alosids (American shad and alewives), reestablish a resident striped bass spawning population to the estuarial complex, and refine/expand an Anadromous Fish Restoration Plan for the Kennebec River.

Maine AFC-27	Lewis N. Flagg	F-42,500
		S-42,500

Androscoggin River anadromous fish enhancement - Restore anadromous runs of American shad and other alosids to the Androscoggin River. Determine the timing, magnitude, sex composition, and year class strength of alosid populations, with particular emphasis placed on juvenile alewives.

Atlantic herring:

Maine 410-R	Stanley B. Chenowith	F-87,579
		S-85,761

Transboundary herring studies - To assess the importance of Eastern Maine and Southwestern New Brunswick spawning sites by tracking the dispersal of Atlantic herring through both the juvenile and adult stages between Canadian and United States waters. Study results will enable the State to effectively address transboundary management concerns for this species.

Atlantic Sturgeon:

Georgia AFC-29	Susan Shipman	F-86,000
		S-86,000

Assessment and biotelemetry studies of Atlantic sturgeon in Georgia - Determine the population structure of the commercial sturgeon fishery including age date, sex ratios, length frequencies and size at maturity. Conduct a biotelemetry study on Atlantic sturgeon to determine movement and migration patterns. Determine spawning migration, residence times, daily and seasonal movements.

Groundfish:

Alaska 5-52-R	Barry Bracken	F-80,000
		S-37,600

Southeastern Alaska Groundfish Monitoring - Determine domestic groundfish landing in the eastern Gulf of Alaska. Collect biological data including length, weight, size and maturity data from the commercial fisheries.

Alaska 5-54-R	Barry Bracken	F-236,100
		S- 78,900

Southeast Alaska Groundfish and Herring Research - Determine domestic groundfish landings in the Eastern Regulatory Area of the Gulf of Alaska; refine hydroacoustic equipment to make reliable herring biomass estimates.

Oregon 1-185-R	Robert Demory	F-38,018
		S-12,672

Groundfish stock assessment; Discard study - Determine species composition of groundfish caught by trawl, determine size and age composition of discarded sole and sablefish and use this information to correct catch at age estimates used in cohort analysis.

Washington 1-170-R	Alan Millikan	F-78,688
	Jack Tagort	S-26,229

Marine fish management and stock assessment - Collect and analyze stock assessment data from port samplers, log books and research cruises to implement and monitor the Pacific Coast Fishery Management Plan.

Washington 1-184-R	Brian Culver	F-8,677
		S-2,893

Central coast groundfish monitoring - Monitor commercial and recreational landings of groundfish and obtain biological information needed for effective management.

Pacific herring:

Alaska 5-51-R	Dennis Blankenbeckler	F-160,000
		S-105,800

Pacific herring research - S.E. Alaska - Monitor the commercial Pacific herring roe fishery in southeast Alaska. Assess stock abundance with hydroacoustical equipment. Collect data on age, growth, and length frequencies. Survey spawning grounds to assess spawning success.

Pacific salmon:

Alaska	AFC-67	Philip Gray	F-113,600 S-113,600
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Microwire tagging of wild coho salmon stocks - Evaluate and refine management techniques for wild coho salmon stocks in southeast Alaska through coded wire tagging studies.

Alaska	AFC-70	Fred Bergander	F-72,900 S-72,900
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Southeastern Alaska sockeye salmon apportionment studies - Collect information for the management of salmon fisheries and to construct a data base for forecasting timing and size of salmon runs and allocating salmon stocks to commercial fisheries. Provide a mark-recovery and biological sampling program for decision making.

Alaska	AFC-71	Doug Jones	F-154,600 S-154,600
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Southeastern Alaska pink and chum salmon studies - Insure optimum escapement of pink and chum salmon spawners into streams of southeast Alaska. Forecast timing, distribution, and magnitude of pink and chum salmon returns. Investigate and define relationships between environmental fluctuations of salmon returns.

Alaska	AFC-72	Scott Marshall	F-133,900 S-341,100
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Southeastern Alaska port sampling - Determine migration routes, run timing, relative abundance, and contribution rates based on data obtained from results of coded wire tag recoveries.

Alaska	AFC-73	Donald E. Rogers	F-32,000 S-33,114
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Chignik sockeye studies - Monitor and determine the importance and dynamics of late season runs of sockeye and coho salmon that return to Chignik Lake on the Alaska Peninsula. Investigate the feasibility of maintaining the weir on Chignik River through mid-September to calibrate methods for estimating late season escapement.

Alaska	AFC-75	Alan Davis	F-490,400 S-490,500
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Anadromous Salmon Research in Southeast Alaska - Index abundance of salmon populations returning to river systems to provide commercial fishery managers information for managing harvests; obtain information on migration routes, run timing, relative abundance, and contribution of key salmon stocks.

California	AFC-18	Forrest L. Reynolds	F-0 S-0
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Salmon and steelhead assessment - (1) Sample commercial and recreational salmon fisheries on northern California coast (2) assess status of Klamath River salmon resources (3) develop salmon habitat and stock protection, rehabilitation and improvement strategies on northern California rivers.

Salmon Research and Management - Ocean salmon port sampling. Assessment of Klamath River salmon and steelhead returns and harvest. Determine size, composition, distribution and timing of adult salmon runs in the Trinity River. Determine if sonar can be used to count salmon accurately in the Klamath River.

Oregon AFC-127

Jim Lichatowich
Emery Wagner

F-168,112

S-168,112

Research and development of Oregon's coastal salmon stocks - Conduct investigations on hatchery and wild stocks of chinook and coho in selected Oregon estuaries and rivers.

Oregon AFC-130

Malcolm Zirges

F-347,872

S-173,935

Joint Oregon-Washington multijurisdictional salmon management program - Monitor the commercial and recreational ocean salmon fisheries in Oregon; apply, recover and decode coded wire tags; and assess stock abundance and distribution.

PMFC AFC-126

Ken Johnson

F-67,516

S-33,758

Regional Mark Processing Center - Operate the Regional Mark Processing Center for identification of salmon stocks tagged, released and recovered in west coast fisheries.

Washington AFC-128

Richard Lincoln
Lee Blankenship

F-517,200

S-258,600

Joint Washington-Oregon multijurisdictional salmon management program - Monitor the commercial and recreational ocean salmon fisheries in Washington; apply, recover and decode coded wire tags; and assess stock abundance and distribution.

Washington AFC-129

Richard Lincoln
Curt Knudsen

F-37,700

S-37,700

Quantitative analysis support - Develop experimental design procedures to evaluate and refine age and stock identification assessments using scale patterns.

Striped bass:

Alabama AFC-31
(Auburn Univ.)

R. T. Lovell

F-100,000

S-100,000

Nutrition studies for increasing production of striped bass fingerlings - Extract and identify the factor(s) in brine shrimp nauplii responsible for growth of striped bass larvae.

ASMFC AFC-2

(Atlantic States Marine Fisheries Commission)

Paul Perra

F-0

S-0

Reevaluation of interstate striped bass conservation & management planning activities - Reassess the goals and objectives pertaining to cooperative, interstate management of striped bass and revise the existing Interstate Fisheries Management Plan as may be necessary to address developments in the resource and fishery over the past six years. In this process, project will synthesize research information into a form that will delineate management options appropriate for joint state implementation.

Emergency striped bass study workshops - Organize, conduct, and prepare draft proceedings for two striped bass workshops, the purpose of which is to present and address the findings of striped bass investigations as well as to provide state fishery managers with current scientific data so that joint management measures for this species may be effectively implemented.

Maryland AFC-11

Harley Speir

Completed 1986

Striped bass research, Maryland - Characterize the age, sex, and size composition of striped bass in spawning areas and in the Chesapeake Bay commercial fishery; develop data on stock abundance that can be used in modeling stock responses to coastal regulations; and collect specimens of Chesapeake Bay striped bass for stock identification analyses.

Maryland AFC-15

Steve Early

F-110,929

S- 72,673

Maryland striped bass investigations - Characterize the age, size and sex composition of striped bass in spawning areas and during the fall/early winter period in Chesapeake Bay. Implement a tagging program which provides information on migration, mortality and contributions to coastal migratory stocks. Tag return information will aid in current restoration efforts required under the Interstate Fisheries Management Plan for this species.

Massachusetts AFC-20

Paul Diodati

Completed 1986

Characterization of Massachusetts striped bass landings- Determine age, size, and sex by season and location of commercially caught striped bass in Massachusetts waters; this activity continues a catch sampling program established as part of a coastwide monitoring system aimed at generating a time-series data base essential to improved management of the striped bass resource.

New York AFC-13

Byron Young

F-255,400

S- 28,400

A study of the striped bass in the marine district of New York State V - Continue collection of biocharacteristics data of New York's striped bass population through sampling of coastal commercial and recreational catch, and assess striped bass spawning success in the Hudson River to provide indices of year-class strength.

Rhode Island AFC-4

John F. O'Brien

F-83,700

S- 9,299

Striped bass stock assessment in Rhode Island waters- Characterize the composition of Rhode Island striped bass commercial landings to help assess the current status of coastal stocks and determine the level of exploitation by various fisheries.

Virginia AFC-16

Joseph G. Loesch

Completed 1986

A study of the striped bass commercial fisheries in the Rappahannock River, Virginia - Characterize the composition of striped bass by sex, age, length, and weight in the Rappahannock River commercial gill/pound net fisheries. Data collected will be used for determination of population parameters (growth, survival and recruitment) to further assess the decline of commercial striped bass landings in Virginia since 1973.

Virginia juvenile striped bass monitoring program - Monitor the abundance of young-of-the-year striped bass in the James, York, and Rappahannock River systems and examine relationships between juvenile abundance and environmental variables. These data will augment existing data from previous surveys and will provide an updated information base for investigating the decline of striped bass stocks in Virginia waters.

Virginia AFC-18

Joseph G. Loesch

F-119,568

S- 39,749

Striped bass research in Virginia - Monitor the abundance of young-of-the-year striped bass in selected river systems and examine relationships between juvenile abundance and environmental variables. These data will augment existing data from previous surveys and contribute to interstate fisheries management.

Others:

Alabama 2-421-R

Walter M. Tatum

F-423,000

S-141,000

Research and management of Alabama coastal fisheries - Monitor the abundance of larval, postlarval, juvenile and adult shrimp, fish, crabs and oysters in Alabama waters and recommend harvest regulations.

California 4-62-D

Michael Herder

F-0

S-0

Southern California commercial fisheries assessment - Monitoring of fresh fish markets and assessment of interactions between the drift gill net shark and swordfish fishery and marine mammals.

California 4-73-D

Eugene Fleming

Completed 1986

Fisheries monitoring and assessment, 85-87 - Sampling program of dockside commercial landings and market supply of southern California fishery resources.

California 4-79-D

Richard Klingbeil

F-295,384

S- 98,462

Southern California commercial fisheries assessment - Monitoring of southern California fishery resources at wholesale fish dealers. Assessment of interactions between gill nets and marine mammals. Assessment of interactions between gill nets and marine mammals. Assessment of harbor porpoise and harbor seal population.

Florida 2-408-R

Karen Steidinger

F- 78,090

S- 26,030

Size composition of blue crab - Determine size composition and movements of blue crab in Apalachee Bay, Charlotte Harbor and 10,000 Islands. Determine handedness, claw breakage and regeneration of stone crabs harvested by Florida west coast fishermen. Determine genetic identity of various stocks of red drum to assess the hypothesis of multiple isolated populations. Determine age, growth, reproduction, etc., for groupers; and effects of current fishery practices of sublegal spiny lobsters.

Georgia 2-424-R

James L. Music

F-241,500
S- 80,500

Studies and Assessment of Georgia's marine fisheries resources - Monitor penaeid shrimp and blue crab populations in Georgia estuaries for shellfish management decisions. Increase data base knowledge of selected aspects of life histories of Georgia's major coastal finfishes and shellfish. Determine movement and growth of commercially important penaeid shrimp in estuarine and coastal marine waters.

Maine 3-378-R

David B. Sampson

Completed 1986

Early life histories of commercial shrimp and fishes - Study relationship between growth and survival of larval shrimp and fishes and the abundance and quality of other planktonic organisms; also, assess recruitment of juvenile groundfish from inshore concentrations to offshore adult populations.

Maryland AFC-14

J. Mowrer

Completed 1986

Anadromous fish research, Maryland - Conduct spawning stock assessment of anadromous fish populations in the Choptank and Susquehanna Rivers, monitor commercial landings of alewife and blueback herring in Fishing Bay, and investigate adverse watershed conditions which affect migratory passage.

Massachusetts 3-375-R

Arnold B. Howe

Completed 1986

Massachusetts fishery resource assessment - Collect information on abundance, distribution, and size composition of the fishery stocks in Massachusetts coastal waters to provide essential data for managing marine fishery resources in territorial waters and the Fishery Conservation Zone.

Massachusetts 3-409-R

Arnold Howe

F- 50,688
S-152,062

Massachusetts fishery resource assessment - Monitor coastal distribution, abundance, size composition and health of fishery resources inhabiting inshore and coastal waters of Massachusetts.

Michigan AFC-15

Kelley Smith

F-15,000
S-15,000

Evaluation of anadromous fish gilling mortality in trap nets - Evaluate the gilling mortality rate of standard and modified large trap nets by species and numbers gilled, season, and depth. Study data will be evaluated to determine the need for additional management and regulatory measures to enhance the conservation of anadromous fish species in Lake Michigan.

Mississippi 2-422-R

Thomas D. McIlwain

F-420,000
S-140,000

Mississippi Gulf coast fisheries monitoring and assessment program - Assess finfish stocks in Mississippi Sound and adjacent waters with emphasis on spotted seatrout, red drum and striped mullet.

Collect and analyze data on the condition of oyster reefs to determine numbers of live oysters, marketable oysters, number of spawnable oysters, incidence of diseases and predators.

Monitor white and brown shrimp post larvae in coastal Mississippi waters.

Life history investigations of marine fish - Continue evaluation of food habits, age structure, and movements/occurrence of winter flounder in selected New Jersey estuaries. Information collected under this study has been used for addressing management issues including gear conflicts and harvesting methods, and providing recommendations to the New England Fishery Management Council relating to a proposed size limit on winter flounder.

North Carolina 2-419-R

Michael W. Street

F-292,700
S- 97,567

North Carolina commercial finfish assessment - Collect, analyze and report information on North Carolina finfish operations for use in management of the fisheries and preparation and implementation of state and interjurisdictional management plans for the fisheries of species involved.

Oregon 1-180-R

Robert Loeffel

Completed 1986

Groundfish and shrimp assessment - Collect and analyze fishery and research data to determine stock size, yield, catch per unit effort, and mortality rates.

Oregon 1-174-R

Richard Starr

F-48,365
S-16,121

Squid resource assessment - Monitor squid landings to characterize stocks, map areas of harvest, and begin population modelling studies.

Puerto Rico 2-395-R

Carlos Cumpiano

F-263,051
S- 87,684

Puerto Rico commercial fisheries research & development program - (1) Survey shallow water reef fishes at selected areas round the island to determine distribution, abundance, seasonality, and population fluctuation throughout the year cycles of selected commercially important shallow water reef fish populations. (2) Record of fish landings will be made by species and gear in order to provide information on species' composition, relative abundance, and gear catch efficiency. Publications, quarterly bulletins and correspondence will be provided to interested persons and agencies for the benefit of the fishing industry. The project will continue to furnish data for inclusion in the annual summary of U.S. fisheries statistics. (3) To provide with the required routine operations and maintenance for the physical facilities where the Puerto Rico Fisheries Research and Development Program activities are based.

Puerto Rico 2-428-R

Aida Rosario
Graciela GarciaF-1,324,000
S- 441,333

Puerto Rico commercial fisheries research and development program - (1) Monitor the commercially exploited reef fish and spiny lobster resources to determine distribution, relative abundance and seasonal population fluctuation. (2) Provide an efficient and reliable mechanism for recording size and value of the harvest of commercial fisherman in PR. (3) Plan, coordinate and supervise the commercial fisheries research and development program to assure the continuity of PR aquatic resources.

Rhode Island 3-408-R

Timothy R. Lynch

F-57,600

S-19,200

Coastal fishery resource assessment - Collect statistical data for the development of recruitment indices for commercial fishery stocks in Rhode Island coastal waters. Biological parameter information will be used for designing management measures in State waters which are responsive to year class fluctuations and the dynamics of the respective fisheries.

Texas 2-427-R

Larry McEachron

F-1,220,000

S- 406,666

Texas commercial fisheries management program - Monitor trends in brown shrimp, white shrimp, pink shrimp, blue crab and Eastern oyster relative abundance and size. Population status to be used to determine management regulations.

Trust Territory 4-55-D

Marian Henry

Completed 1986

Truk Lagoon small purse seine demonstration - Development of small purse seine for harvesting small pelagics in Truk Lagoon.

Virgin Islands 2-411-R

James Beets

F-117,500

S- 14,107

Assessment of the population dynamics of snapper/grouper spawning aggregations to identify areas used for spawning to determine the seasonality and assess the fishing pressure on aggregations to recommend management plans. Baitfish survey to determine seasonality, species, composition, abundance, distribution and commercial value in order to achieve the optimum sustained use of this resource.

SHELLFISH

Clams:

South Carolina 2-426-D

Bill Anderson

F-30,147

S-10,049

Development of subtidal hard clam populations in coastal SC - Establish subtidal clam populations. Locate commercial sources of seed oysters. Locate hard clam brood stock populations. Initiate a physical evaluation of the subtidal hard clam habitat.

Crabs:

Washington 1-167-R

Steve Barry

F-31,595

S-10,531

Coastal dungeness crab project - Sample crab at canneries, coastal ports, and on vessels to collect biological and management data.

Lobster:

Connecticut 3-374-R

Mark Blake

F- 20,400

S- 20,400

Connecticut lobster investigations - Study adult population characteristics, reproductive abnormalities, larval ecology, and juvenile abundance of American lobster in Long Island Sound.

Maine 3-370-R

Jay S. Krouse

Completed 1986

Lobster stock assessment - Monitor current and previous biological and socio-economic conditions in Maine's lobster fishery, increase precision of population parameters, and study interaction of spawning stock size, egg production and nursery areas, to resultant recruitment into the commercial harvest.

Maine 3-407-R

Jay S. Krouse

F-58,564

S-58,564

Lobster stock assessment - Monitor biological and socio-economic conditions, refine estimates of population parameters, and investigate stock-recruitment relationship, reproductive potential, and movement/growth/distribution of juvenile lobsters. Information resulting from previous phases of this study has provided critical data for a lobster management plan not only for the State of Maine but also the New England Fishery Management Council.

New York 3-395-R

Philip T. Briggs

Completed 1986

Monitoring commercial lobster catch in Long Island Sound - Determine the size composition of the commercial American lobster catch and total mortality rates of this species in Long Island Sound.

Mussels:

Illinois 3-373-R

Richard E. Sparks

F-40,189

S-13,396

Effects of fleeting areas on mussel beds - Determine effects of a new river terminal and barge fleeting area on existing mussel bed in the Illinois River.

Tennessee 2-420-R

J. Earl Hayes

F-45,000

S-15,000

Commercial mussel resources management - Collect data on raftshell culture in order to compare growth rates and apparent health of cultured shells in comparison to wild shells in the same area. Collect data on the mussel resource in the study area that has the status of a sanctuary with no harvest being allowed. Obtain data from mussel harvesters, exporters, etc., to establish harvest levels on size, number and total tonnage.

Oysters:

Alabama 2-423-D(4b)

Hugh A. Swingle

F-1,399,000

S- 0

Restoration of oyster resources lost during a natural disaster - Restore oyster resources by planting clean clam shell on reefs of AL to provide a substrate for larval oysters to attach.

Florida 2-425-D(4b)

John W. Schneider

F-1,472,000

S- 0

Restoration of oyster resources impacted by Hurricane Elena - Restore and rejuvenate Apalachicola Bay oyster resources by planting suitable cultch material on selected reef sites for larval oysters to attach.

Florida 2-407-D

Lawrence Sangaree

F-19,360

S- 6,454

Construct new oyster reefs - Construct approximately 22 to 27 acres of new oyster reefs for the cultivation of oysters. Enhance oyster production by moving live coon oysters out of overcrowded, shallow water areas.

New Hampshire 3-414-D

John Nelson

F-22,400

S- 7,467

Improvement of American oyster, Crassostrea virginica, beds in the Great Bay Estuary - Enlarge and enhance habitat of American oyster, Crassostrea virginica, stocks by artificially improving bottom sediments; reduce and/or eliminate predation by the oyster drill, Urosalpinx cinerea.

Scallops:

Rhode Island 3-400-R

John Karlsson

F-0

S-0

Examination of bay scallop (Argopecten irradians) reproductive cycles - Perform histological study of gonad development and gamete transport in bay scallops collected from Rhode Island coastal ponds to ascertain differences in spawning patterns and strategies. Knowledge attained under this study regarding the variables associated with fluctuations in scallop recruitment will be useful in management and stabilization of scallop populations.

Shrimp:

Washington 1-183-R

Barbara McIntosh

F-31,583

S-10,528

Pink shrimp study - Conduct survey cruises and monitor coastal pink shrimp landings to collect biological and management information.

Others:

Alabama 2-421-R

Walter M. Tatum

F-423,000

S-141,000

Research and management of Alabama coastal fisheries - Monitor the abundance of larval, postlarval, juvenile and adult shrimp, fish, crabs, and oysters in Alabama waters and recommend harvest regulations.

Kentucky 2-418-R

Tom Timmons

F-22,500

S- 7,500

Commercial fishery resources survey-Kentucky Lake - Determine the population structure of commercial fish species including size, weight, age and species caught.

Kentucky 2-429-R

Tom Timmons

F-16,900

S- 5,633

Exploitation rates, movements and population size of commercial fish species at Kentucky Lake - Estimate rate of exploitation of commercial fish species by gear type of commercial and sport fishermen. Determine movement of tagged commercial fish species. Determine percent tag loss of spaghetti tags on commercial fish species in large subimpoundments.

Inventory of New Jersey's estuarine shellfish resources - Continue development of updated distribution/inventory information on New Jersey's estuarine shellfish resources with an annual dockside value in excess of 5.1 million dollars. Project emphasis is directed toward assessing productive capability of various shellfish areas, determining critical environmental conditions and maintaining successful management programs.

New York 3-402-R

Richard E. Fox

Completed 1986

Assessment of New York's shellfish resources III - Provide shellfish population density and distribution information as well as description of shellfish industry participation, to serve the needs of State and local government resource managers administering programs to best utilize and maintain New York's shellfish resources. Study activities include a hard clam population index program for Great South Bay and an assessment of State-owned underwater lands, with an emphasis on productive grounds where water quality fails to meet public health standards for direct marketing of shellfish.

New York 3-403-D

James Redman

F-76,200
S-76,200

Sanitary examination of shellfish lands - Monitor bacteriological and fecal coliform levels of shellfish harvesting areas to determine compliance with state certification and water quality standards. Previous project activities have reduced the risk of certified shellfish lands being implicated in disease outbreaks and have helped to maintain consumer confidence in the safety of shellfish consumption.

Texas 2-400-R

Richard Benefield (shrimp)
Paul Hammerschmidt (blue crab)F-787,985
S-263,328

To determine the status of shellfish populations to assist the Texas legislature in formulating management regulations and to recommend shellfish harvest regulations for coastal waters under the management jurisdiction of the Texas Parks and Wildlife Commission. To determine the status of shrimp populations in the Gulf of Mexico off Texas.

Washington 1-168-R

Steve Barry

F-31,657
S-10,553

South coast marine fish/shellfish monitoring - Monitor landings and collect biological data on groundfish, shrimp, and clams for improved resource management.

West Virginia 3-380-R

Donald J. Orth

Completed 1986

Investigation of commercial invertebrate bait harvest in the New River, West Virginia - Determine the extent and nature of commercial bait harvesting of crayfish in the New River and evaluate impacts of the present and anticipated commercial harvest on sport fish populations.

STATISTICS

Hawaii 4-80-D

Alvin Katcharu

F-58,007
S-19,336

Upgrading Hawaii's Commerical Fisheries Information System - Acquire computer hardware and software to permit rapid processing and analyses of data. Design and implement data

quality control procedures, improve fish reporting forms, handling of completed forms, and provide fishermen with information feedback.

Kansas 2-401-R	Jim Stephens	F-20,000 S- 6,667
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Kansas marketable fisheries investigation - Collect and report aquatic statistics on an annual basis. Determine and apply approaches necessary for management recommendations. Provide scientific informational base to manage commercial aquatic resources. Prepare report of marketable investigation.

Kansas 2-430-R	Jim Stephens	F-50,700 S-16,900
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Kansas Marketable Fisheries Investigation - Provide an information base to determine the benefit of aquatic resources to commercial industries and consequently the industries' contribution to the state's economy.

Maine 3-396-D	Edwin Creaser	F-22,376 S-22,376
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Collection of landings data and biological sampling of commercial fisheries landings - To collect and analyze commercial fisheries landings data by species and gear from Maine coastal ports between Rockland and the Canadian border. Landings samples will also be collected for groundfish, sea herring, and selected shellfish species to provide management information on biological parameters including size, age, sex ratio, and fecundity.

Maryland 3-413-D	Christopher Bonzek	F-93,200 S-93,200
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Maryland fisheries statistics - Maintain a comprehensive catch reporting system which focuses on the harvest, value and effort of Maryland's commercial fisheries. To expand the present biological sampling database for the inclusion of several new economically important species. Analysis of this data will allow the development and implementation of fisheries management models and plans.

Maryland 3-345-D	Christopher Bonzek	F-0 S-0
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Maryland fisheries statistics - Maintain a comprehensive catch reporting system for Maryland commercial fisheries.

Massachusetts 3-371-D	Charles O. Anderson, Jr.	Completed 1986
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Collection, compilation, evaluation, and dissemination of Massachusetts fishery statistics - Collect and analyze commercial fisheries landings data, and establish an EDP center to assist in program evaluation.

Massachusetts 3-416-D	Charles O. Anderson, Jr.	F-54,500 S-97,395
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Fisheries statistics and automated data processing - Compile, through computer entry and analysis, all required reporting forms submitted by Massachusetts commercial fishermen and licensed finfish/shellfish dealers. Monitor the effectiveness of the Shellfish Transaction Tracking System, which traces any shellfish transmitted disease outbreak back to its source.

New Mexico 2-431-R

Mike Hatch

F-53,093
S-17,698

Impacts of Commercial Fish Harvest - Estimate biomass and density of potential commercial species by sampling with gill nets and trawls. Estimate growth, production and potential yields. Assess potential for harvest intensity and estimate impact on game fish values.

Northern Marianas 4-78-D

Nicolas Guerrero

F-22,500
S- 6,000

Marianas Data Collection - Conduct creel surveys, collect receipt tickets from fish sales, collect data from tuna transshipments, and update vessel inventory data.

Trust Territory 4-81-D

Toshiro Paulis

F-15,100
S- 7,500

Palau Reef Fish Subsistence Catch - Develop and implement a sampling scheme to determine the size and composition of the subsistence catch in the sixteen separate states in the Republic of Palau.

Trust Territory 4-69-D

Mike Gawel

F-15,100
S- 5,033

Regional standardization of catch data - Develop data collection system for the Federated States of Micronesia.

Virginia 3-417-D

Lyle M Varnell

F-130,700
S- 43,567

Commercial fisheries statistics information systems - Continue efforts in the collection of finfish and shellfish catch statistics to allow assessment of the commercial component of total landings in Virginia waters. Analysis of this data will provide information necessary for determining effects of fisheries management decisions and developing fishery management plans.

Virginia 3-361-D

Erik J. Barth

F-0
S-0

Fisheries resource statistics and information systems - Continue efforts in the collection of Virginia's commercial finfish and shellfish catch statistics and harvestor employment information.

Virginia 3-421-R

Joseph G. Loesch

F-26,600
S- 8,868

The assessment of commercial fishing effort in Virginia - Collect fishing effort data for pound nets and gillnets in Virginia's James, York and Rappahannock River commercial fisheries. Study results will provide information needed for the formulation of rational State management strategies for striped bass and shad/river herring. The project also directly addresses research concerns stated in the interstate management plans for these species.

REGIONAL HIGHLIGHTS

The Grant-in Aid for Fisheries Programs (P.L. 88-309, P.L. 89-304) have, since their inception, provided financial assistance to the States and territories for purposes of developing and enhancing the commercial and anadromous fisheries of the United States. Most of the funds have been used for acquiring resource and fisheries information needed for management decisionmaking. Prior to 1976, the funds were directed almost exclusively at the management of intra-and interstate fisheries. Since the passage of the Magnuson Fishery Conservation and Management Act of 1976, the percentage of the Federal funds directed at cooperative State-Federal management of the fisheries which fall under the purview of the Act has increased to approximately 60 percent. The following regional highlights describe the contributions these programs make to the management of the commercial and anadromous fisheries of the United States.

NORTHEAST REGION

Previous annual highlights for the Northeast Region have described the importance of P.L. 88-309 and P.L. 89-304 activities with respect to state/federal interjurisdictional fisheries concerns along the Atlantic seaboard (striped bass, shad and river herrings, lobster, groundfish) and the inland-Great Lakes Region (yellow perch, chub, whitefish, walleye, channel catfish). Specific research objectives (e.g., resource/population assessment and stock-identification techniques) being addressed under both the commercial and anadromous fisheries grant programs have also been briefly discussed to demonstrate the mutual benefit of data generated to both the scientific and fisheries management communities. The effective conduct of study activities, as well as the practical application of project results, has been shown to depend upon close coordination and communication between state and Federal agencies, educational institutions, and the commercial/recreational fishing industries. To further exemplify the nature and scope of program objectives, the following summary highlights both projects which were initiated and those which were concluded by the Northeast Regional States during 1986.

Two shellfish projects were completed during this calendar year. In New York, the Division of Marine Resources completed a 10-year program activity under P.L. 88-309 in collecting shellfish (hard clam) population density and distribution information and describing harvest of these resources by the State's shellfish industry. Study efforts included a spring/fall population index evaluation of the hard clam resource within Great South Bay, and development of an industry profile by means of a questionnaire survey soliciting catch and effort information from harvesters. The information derived from this project has had a direct application in New York's management programs implemented to conserve and wisely utilize shellfish resources for the benefit of harvesters, consumers of shellfish products, and the State's economy.

In Maine, the Department of Marine Resources provided a final report describing the results of plankton surveys in Sheepscot Bay. One study activity was part of a multi-year research program designed to investigate the relationship between northern shrimp (Pandalus borealis) and its environment as it might relate to the observed severe fluctuations in year class strength. The approach involved the combination of laboratory experiments, where larvae were fed various kinds and quantities of food under controlled conditions, and field studies which examined laboratory-derived hypotheses under natural conditions. Data collected during the 3-year project indicated a possible synchronous relationship between larval shrimp survival and food supply--i.e., timing of phytoplankton (diatom) blooms. Project results may have future population modeling implications for this interjurisdictional resource, which is managed through State/Federal cooperation, with actual fishery regulation coming under the authority of the Atlantic States Marine Fisheries Commission.

New Hampshire completed activities under P.L. 89-304 relative to the hatchery culture and release of Atlantic and Pacific salmon into the State's coastal watersheds. Coho salmon have been stocked into the Lamprey River by the Fish and Game Department in an effort to achieve a 2-4 percent (5,000 to 12,000) adult return. Although this goal has not yet been fully realized, this initiative has generated a significant marine recreational fishery (during September 1985 alone, approximately 10,000 angler-hours were expended in the State's marine and estuarine waters). Atlantic salmon have also been cultured under this project for subsequent release into coastal rivers. This activity has been an ongoing, cooperative initiative between New Hampshire, Massachusetts, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service to restore anadromous species to the Merrimack River system.

Six new projects were initiated in 1986. Under P.L. 88-309, the Maryland Department of Natural Resources will monitor shellfish disease and mortality in Chesapeake Bay. Study emphasis will be directed toward the pathogenicity of a neoplasia disease in soft-shelled clams and lethal oyster parasites. Economic importance of this research is underscored by the fact that the dockside value of Maryland Chesapeake oysters alone exceeds \$15.0 million annually. Another project in that State will collect biological parameter data and harvest statistics for "underutilized" fishery resources including catfish, bluefish, and flounders. The need for this resource management information becomes especially critical, with recent declines of Maryland's more traditional fisheries in the Chesapeake area. Similarly, the Virginia Marine Resources Commission will also enhance its statistical data base through documentation of fishing effort during harvest operations resulting from the State's pound net and gillnet commercial fisheries. The data will be compiled and assessed by observations from aircraft fly-overs, through cooperative arrangements with the Virginia Institute of Marine Science (College of William and Mary). Results should assist in determining whether changes in landings over time are the consequence of changes in stock abundance or changes in the level of fishing effort directed at a given species.

Two other projects initiated during 1986 demonstrate the increasing importance of multi-agency (State/Federal/international) coordination with regard to effective fisheries and environmental management. In West Virginia, for example, the Department of Natural Resources (in cooperation with the Virginia Polytechnic Institute and State University) is compiling available information concerning commercial fisheries in West Virginia's portion of the Ohio River. The overall objective is to enhance fisheries management capabilities and facilitate the preparation of environmental impact assessments. During this study, life history information will be assembled, habitat maps will be developed, and commercial fisheries critical information needs will be evaluated. The product of these analyses will include the development of an atlas and critical evaluation of river sections and biological concerns needing further information and study. This data will be computerized and shared with other concerned interests in the Ohio River Region--the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, power utility companies, and universities.

On an international level, United States and Canadian researchers are studying dispersal of larval Atlantic herring. The herring fisheries of eastern Maine and southwestern New Brunswick have been a unique management problem for many years. The transboundary movements of these fish, at both juvenile and adult stages, have made it difficult to evaluate the effects of harvest on subsequent recruitment and thus establish suitable management measures. The Maine Department of Marine Resources, under P.L. 88-309, and Canada's Department of Fisheries and Oceans have, accordingly, agreed to conduct a joint study of the source and drift of larval herring in an area between Frenchmans Bay, Maine, and Saint John, New Brunswick. Project results are expected to foster the formulation of effective State and Canadian management measures for this shared commercial fisheries resource.

Under P.L. 89-304, the Atlantic States Marine Fisheries Commission (ASPMC) has begun to coordinate an interstate initiative to determine the magnitude of American shad (alosis)

harvest in territorial sea waters and develop a pilot program to monitor stocks exploited by the Atlantic coastal fisheries between Maine and Florida. Also, the Northeast Regional States, through ASMFC, will jointly identify high priority concerns for future anadromous alosid research; the Commission will also review the progress of States in implementing the research and management measures outlined in the Interstate Management Plan for Shad and River Herrings (prepared under a previous P.L. 89-304 project).

In summary, during the 20 years since inception of the Grant-In-Aid Program, significant trends have been noted in the evolution and expanding scope of project activities in the Northeast Region. Through these studies, it has become apparent that multi-state and Federal agency responsibilities must be equitably shared if shared interjurisdictional fisheries are to be effectively managed. With regard to an analysis of overall program benefits, it is also apparent that individual project results cannot be assessed uniformly in terms of increased economic returns or benefit/cost projections. Rather, projects are more realistically evaluated on a long-term biological basis--and ultimately scrutinized by their relative contributions to the successful restoration and sustained perpetuation of the Nation's commercial and anadromous fisheries resources.

SOUTHEAST REGION

The 17 States, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands that constitute the Southeast Region represent a great diversity of fishery resources. This Region is one of the greatest producers of commercial and recreational fisheries for the benefit of the Nation. In 1986, the \$4.8 million in P.L. 88-309 and P.L. 89-304 funds allocated to the States of the Southeast Region were expended to support the management of marine and freshwater fishery resources valued at over \$2.5 billion. Disaster funds of \$2.9 million (88-309(4b)) were used to help restore the oyster fisheries of Alabama (\$1.4 M) and Florida (\$1.5 M) that were devastated by Hurricane Elena.

The inland States continued P.L. 88-309 projects for the enhancement and management of stream and reservoir commercial fisheries. Kentucky, Nebraska, Missouri, Arkansas, Oklahoma, and Kansas continued to monitor commercial fisheries in streams and/or reservoirs for commercial fisheries management. New Mexico continued to test methods of mass-harvesting commercial species from small reservoirs. Tennessee continued the survey of the distribution and abundance of important fishery resources and Iowa continued to test new methods for the commercial aquaculture of channel catfish and walleye.

The ten coastal States continued to develop a data base for the management of important marine fisheries. The information accumulated from P.L. 88-309 sponsored projects not only supported the management of commercial fisheries in the State's territorial waters; but, the information was also important in developing, implementing, and evaluating fishery management plans of the South Atlantic, the Caribbean, and Gulf of Mexico Fishery Management Councils. The Gulf of Mexico States utilized P.L. 88-309 projects to monitor king mackerel, spiny lobster, blue crab, stone crab, oysters, shrimp, and other fishery resources.

The South Atlantic States continued fishery resource monitoring activities in support of the territorial sea and U.S. exclusive economic zone (EEZ) fishery programs. Georgia is conducting research and assessment of shrimp and finfish. North Carolina continued the Atlantic croaker life history investigation and finfish assessment work. South Carolina is conducting a study on the subtidal hard clam populations for future development. All of these P.L. 88-309 activities are adding important data for the management of interjurisdictional fisheries of the territorial sea and U.S. EEZ.

The U.S. Virgin Islands and the Commonwealth of Puerto Rico continue to gather information on reef fisheries. Spiny lobster, finfish, and shellfish fisheries were monitored to

provide data for management in conjunction with the Caribbean Fishery Management Council. Both Puerto Rico and the Virgin Islands conduct programs to determine the weight and value of commercial fisheries landings.

Mississippi, South Carolina, North Carolina, and Auburn (Alabama) University participated in the Anadromous Fish Conservation Program (P.L. 89-304) in 1986. Mississippi continued its cooperative striped bass program with the National Marine Fisheries Service and Alabama to restore coastal striped bass populations to their historic levels. Populations of striped bass are now becoming abundant and a recreational fishery for "stripers" has developed in both States. North Carolina and South Carolina continue to monitor anadromous fisheries to determine their status, harvest, and abundance. These data provide a basis for State and interjurisdictional fishery management programs for anadromous fisheries in the Southeast Region.

NORTHWEST REGION

In FY86, the nine States comprising the Northwest Region received \$349,200 under the Commercial Fisheries Research and Development Act (P.L. 88-309) and \$1,100,000 under the Anadromous Fish Conservation Act (P.L. 89-304). About one-third of the Regional P.L. 88-309 allocation supported projects for the fisheries agencies of the six inland states; Colorado, Idaho, Montana, South Dakota, Utah, and Wyoming. The majority of the appropriated P.L. 88-309 and P.L. 89-304 funds supported Oregon and Washington projects vital to the management of the major interjurisdictional commercial ocean fisheries in the Northwest; i.e., salmon and groundfish.

Inland water P.L. 88-309 supported programs in FY86 were divided between those contributing to improved harvest management strategies, and those contributing information needed to develop or maintain successful fish culture efforts. Montana continued its reservoir stock assessment studies which serve to refine and update the existing data base on goldeye, cisco, and spottail shiners. Wyoming's projects centered on research on the baitfish industry and also on the possible development of a limited access catfish fishery in Wyoming. South Dakota conducted further studies on the abundance and distribution of rainbow smelt populations using hydroacoustic survey methods while Utah continued a disease monitoring and certification program for commercial trout hatcheries. Idaho completed its prior years' project of defining the epidemiology of proliferative kidney disease in trout hatcheries and began a new project which provides for the production of antisera for use in identification of the infectious hematopoietic necrosis virus. Colorado progressed into the next segment of its studies on developing programs for increased survival and growth of warm water fish by initiating investigations on factors limiting the growth of pond-reared bluegill.

The majority of the P.L. 88-309 funds provided to Washington and Oregon were utilized in regional groundfish, pink shrimp, and Dungeness crab studies necessary for the management of these species. Groundfish are managed coastwide under the Pacific Fishery Management Council (PFMC) Groundfish Management Plan which has been in effect since late 1982, while shrimp and Dungeness crab have been managed under a multi-state cooperative effort which was originally drafted by the PFMC but not implemented as a Council management plan. P.L. 88-309 funds provide for a portion of the catch sampling and biological data activities necessary for continual updating of the data base for management of these species. Washington's regulation of the Dungeness crab fishery depends heavily upon the results of a shell condition monitoring program supported by P.L. 88-309 funds.

Historically, the Pacific salmon fishery is the largest and most controversial fishery in the Northwest. Problems within the fishery are a result of dwindling stocks, a highly mobile and overcapitalized commercial fishing fleet, treaty obligations, obligations under the new U.S.-Canada Salmon Treaty, and the necessary interaction of a myriad of affected state and Federal management entities. The ocean fishery has been regulated and

coordinated under the PFMC salmon management plan since 1978. Management of mixed stocks, some of which are more depleted than others, requires continuous data collection, analysis, and monitoring of the catch to meet escapement and allocation goals. P.L. 89-304 funding has been essential for these efforts. As management data needs have become more critical, P.L. 89-304 program emphasis has shifted away from enhancement techniques and basic research.

In 1986, about 20 percent of the coastal States P.L. 89-304 funds were used for applied research. Oregon continued monitoring the natural and artificial production of chinook and coho in coastal streams, and conducted studies to determine the limiting factors in the estuarine and ocean survival of salmonids. Washington continued efforts to develop new stock identification techniques and to refine and improve the application of genetic stock identification (GSI) methods. The majority of P.L. 89-304 funds were utilized in projects that contribute fisheries data essential for MFCMA management. These projects include tasks which monitor ocean salmon fisheries, assess spawning escapements, apply coded wire tags to hatchery released salmon, recover and decode tags from commercial and recreational fisheries, identify salmon stocks, and assess salmon stock abundance and distribution.

SOUTHWEST REGION

In 1986, 78 percent of the Southwest Region's grant funds were used either to collect information needed for resource assessment or to improve data collection systems. In California, Commercial Fisheries Research and Development Act funds were directed into three areas in southern California: (1) dockside sampling, monitoring of commercial resources such as Pacific mackerel, jack mackerel, Pacific sardine, anchovy, California halibut, Pacific bonito, white seabass, California barracuda, groundfish, and albacore. Several of these species are managed under annual or season quotas. Anchovy and groundfish are managed by Federal fishery management plans developed by the Pacific Regional Fishery Management Council. The monitoring effort includes biological sampling as well as the collection and analysis of logbook data. This information and information from at-sea surveys is used to develop the analytical tools to assess the status of these resources; (2) market sampling, monitoring that complements the dockside sampling by collecting biological information such as age and length composition at the fresh fish markets, primarily from the shark, swordfish, and groundfish resources. The two sampling efforts noted above provide the data requirements for most commercial fisheries landed in ports from Santa Barbara to San Diego; (3) drift gill-net survey, close monitoring of the drift gill-net shark and swordfish fishery to obtain information on how to minimize the incidental take of California sea lions while maintaining an effective fishery. The effort augments the continuing National Marine Fisheries Service funded marine mammal fishery interaction program. The information is used to analyze the effectiveness of state fishery closures and to develop new approaches to reduce fishery interaction with marine mammals.

In 1986, as a special task within work conducted under the Anadromous Fish Conservation Act in California, a hydroacoustic method of determining the size of salmon runs in the Klamath River was tested. Two acoustic transducers were mounted near the edge of the river that ensonified most of the river cross section. The data for each individual target was logged by a microcomputer. Results of the hydroacoustic study are being compared with data collected during lower river seining operations and with in-river run size estimates completed by other projects.

New data collection projects were begun in Hawaii, The Commonwealth of the Northern Mariana Islands, and Palau, and an on-going project in the Federated States of Micronesia was extended for 1 year. The basis of these projects is to improve fishery information collection of commercial and subsistence fisheries in the western Pacific. The data will become available to managers throughout the area through the Western Pacific Fishery Information Network, the system developed by the island areas and coordinated through the Honolulu Laboratory, National Marine Fisheries Service.

ALASKA REGION

In FY86, the Alaska Region received \$470,000 under the Anadromous Fish Conservation Act (P.L. 89-304) and \$244,000 under the Commercial Fisheries Research and Development Act (P.L. 88-309). The Region apportioned \$476,000 of P.L. 89-304 money to the Alaska Department of Fish and Game (ADF&G) and \$32,000 to the University of Washington's Fishery Research Institute. The Region apportioned all of the P.L. 88-309 money to the ADF&G. These P.L. 89-304 and P.L. 88-309 monies funded research projects directed at the management of certain segments of Alaska's commercial salmon and groundfish fisheries, respectively. The salmon segments included fisheries for sockeye, pink, chum, and coho, and chinook salmon; the groundfish segments included groundfish in the Gulf of Alaska and Pacific herring in the Gulf of Alaska. Salmon fisheries that the salmon projects supported had a total exvessel value of about \$88 million. Groundfish fisheries that the groundfish projects supported had a total exvessel value of \$16.3 million.

Objectives of the projects were the following:

Southeastern Alaska Sockeye Salmon Apportionment Studies:

Determine the sockeye salmon stock contribution of two Southeastern Alaska lake systems to the commercial Lynn Canal drift gillnet fishery; determine sockeye salmon escapements to the two lake systems; analyze spawner/recruit relationships as a means of evaluating escapement goals; project the escapement of sockeye salmon to the lake systems; maintain escapement and catch records for all major sockeye salmon river systems and all southeastern gillnet and seine fisheries; and provide technical and logistical support for U.S./Canada salmon studies.

Southeastern Alaska Pink Salmon Studies

Develop background data and techniques to improve accuracy of forecasts of pink salmon returns in Southeast Alaska; determine optimum levels of pink and chum salmon escapement into Southeastern Alaska streams to aid in achieving the maximum sustained yield; obtain scale samples to aid in stock identification and separation; continue methodology to estimate total escapement (numbers of salmon returning to parent streams) for use in inseason management and post evaluation of management strategies.

Southeastern Alaska Port Sampling

Sample chinook and coho salmon of wild and hatchery origin and chum salmon of hatchery origin to recovery microwire tags used in providing data necessary for estimating migration routes, run timing, relative abundance, and contribution rates of tagged fish; assess troll fleet performance inseason to promote attainment of salmon quotas as mandated by the U.S./Canada salmon treaty; collect age, size, and sex data from salmon catches and escapement to evaluate salmon returns from specific brood years, forecast salmon returns, and assess effects of gear selectivity.

Microwire Tagging of Wild Coho Stocks

Determine harvest rates by area and gear for selected coho salmon in Southeastern Alaska; determine migration routes and timing of different stocks through the fishery; estimate escapement and contribution to the fishery for each respective fishery; refine management through development of objective escapement goals and effective management techniques.

Southeastern Alaska Groundfish Monitoring

Determine domestic groundfish landing in the Eastern Area of the Gulf of Alaska by species, month, and gear type; collect biological data on key species including length, weight, sex, and maturity, using commercial fishery sources and limited resource assessment programs;

continue the hook-and-line and trawl logbook programs and develop methods for timely data entry and analysis; conduct independent resource assessment and tagging cruises for sablefish and rockfish in the Southeastern area as opportunity and funding permit; implement fishery closures in State of Alaska waters and cooperate with NMFS in closing Federal waters to fishing when annual harvest objectives have been reached.

Pacific Herring Research, Southeastern Alaska

Refine and develop hydroacoustic equipment to make reliable herring biomass estimates; conduct and evaluate hydroacoustic assessments of major herring stocks in Southeastern Alaska for age and growth analysis as an indicator of stock condition; develop, conduct, and evaluate spawning ground studies to provide life history information and spawner numbers to use as a comparison to hydroacoustic estimates and as a basis for quotas where reliable acoustical estimates cannot be made; provide research information for inseason management of the Southeastern herring resource.

- * Provide estimates of the abundance and age composition of the sockeye salmon escapement into the Chignik Lakes occurring after the weir for counting salmon has been removed. Resulting data will enhance understanding of the population dynamics of these stocks and improve management of commercial exploitation of the stocks.

- * Provide baseline information on the abundance and age composition of the coho salmon stocks returning to Chignik, Alaska. Resulting data will be compiled into a developing data base for purposes of evaluating coho production in the watershed and forecasting adult returns.

- * Document consumption of sockeye salmon by juvenile coho salmon in the Chignik Lakes by direct laboratory experimentation and by inference from field sampling coupled with experimental results.

- * Assess the importance of coho salmon predation on sockeye salmon survival in Chignik and Black Lakes on the Alaska Peninsula.

ADMINISTRATIVE ORGANIZATIONS
NONFEDERAL COOPERATORS

<u>State</u>	<u>Agency</u>	<u>Address</u>
Alabama	James D. Martin, Commissioner Department of Conservation and Natural Resource	State Administration Building 64 North Union Street Montgomery 36130
	John S. Ramsey Auburn University, Fisheries Department	Swingle Hall Auburn 36830
American Samoa	Ray Tulofono Office of Marine Resources Government of American Samoa	Pago Pago 96799
Alaska	Don W. Collinsworth, Commissioner Department of Fish and Game	Box 3-2000 Juneau 99802
Arizona	Fred Baker, Commissioner Game and Fish Department	2222 West Greenway Rd. Phoenix, 85023
Arkansas	Steve N. Wilson, Director Game and Fish Commission	2 Natural Resources Drive Markham & I-430 Little Rock 72205
California	Jack C. Parnell, Director Department of Fish and Game The Resources Agency	1416 Ninth Street Sacramento 95814
Colorado	James B. Ruch, Director Division of Wildlife Department of Natural Resources	6060 Broadway Denver 80216
Connecticut	Dennis P. DeCarli, Deputy Commissioner, Department of Environmental Protection	State Office Building 165 Capitol Avenue Hartford 06106
Delaware	William C. Wagner, II, Director Division of Fish and Wildlife Department of Natural Resources and Environmental Control	P.O. Box 1401 Dover 19903
Florida	Elton J. Gissendanner Executive Director Department of Natural Resources	3900 Commonwealth Boulevard Tallahassee 32303
Georgia	J. Leonard Ledbetter, Commissioner Game and Fish Division Department of Natural Resources	Floyd Towers East 205 Butler St. S.E., Suite 125 Atlanta 30334
Guam	Mr. Harry T. Kami, Chief Aquatic & Wildlife Resources Department of Land and Natural Resources	Agana 96910

Hawaii	Mr. Henry M. Sakuda, Director Division of Aquatic Resources Department of Land & Natural Resources	1151 Punchbowl Street Honolulu 96813
Idaho	Jerry M. Conley, Director Department of Fish & Game	600 South Walnut P.O. Box 25 Boise 83707
Illinois	Mark Frech, Director Department of Conservation	Lincoln Tower Plaza 524 South Second Street Springfield 62701-1787
Indiana	Edward L. Hansen, Director Division of Fish and Wildlife Department of Natural Resources	607 State Office Building Indianapolis 46204
Iowa	Larry J. Wilson, Director State Conservation Commission	Wallace State Office Building 9th and Grand Des Moines 50319
Kansas	Bill Hanzlick, Director Fish and Game Commission	Box 54A, Rural Route 2 Pratt 67124
Kentucky	Peter W. Pfeiffer, Director Department of Fish and Game Wildlife Resources	Arnold L. Mitchell Building #1 Game Farm Rd. Frankfort 40601
Louisiana	J. Burton Angelle, Secretary Division of Fisheries Department of Wildlife & Fisheries	P.O. Box 15570 Baton Rouge 70895
Maine	William J. Brennan, Commissioner Department of Maine Resources	State House, Station 21 Augusta 04333
Northern Mariana Islands	Division of Marine Resources	Office of the Governor Saipan 96950
Maryland	Dr. Paul Massicot, Administrator Tidewater Administration Department of Natural Resources	Tawes State Office Building Annapolis 21401
Massachusetts	Philip G. Coates, Director Division of Marine Fisheries Department of Fisheries, Wildlife and Environmental Law Enforcement	Leverett Saltonstall Building 100 Cambridge Street Boston 02202
Michigan	Gordon E. Guyer, Director Department of Natural Resources	S. T. Mason Building Box 30028 Lansing 48909
Minnesota	Larry R. Shannon, Director Division of Fish and Wildlife Department of Natural Resources	Box 20, 500 LaFayette Road St. Paul 55146

Mississippi	Joe Stone, Executive Director Department of Wildlife Conservation	Box 451 Jackson 39205
Missouri	Larry R. Gale, Director Fisheries Division Department of Conservation	P.O. Box 180 Jefferson City 65102
	Leslie S. Uhazy University of Missouri	Division of Biological Science Columbia 62211
Montana	Arthur N. Whitney, Administrator Fisheries Division, Department of Fish, Wildlife and Parks	1420 E. Sixth Avenue Helena 59620
Nebraska	Robert Thomas Chief of Fisheries Game and Parks Commission	Box 30370 2200 North 33rd Street Lincoln 68503
Nevada	William A. Molini, Director Department of Wildlife	1100 Valley Rd. P.O. Box 10678 Reno 89520-0023
New Hampshire	Allen F. Crabtree, III Executive Director Fish and Game Department	34 Bridge Street Concord 03301
New Jersey	Russell A. Cookingham, Director Division of Fish, Game and Wildlife, Department of Environmental Protection	CN-400 Trenton 08625
New Mexico	Dick McCleskey, Chief Fish Management, Department of Game and Fish	State Capitol Building Santa Fe 87501
New York	Gordon Colvin, Director Division of Marine Resources	Building 40, State University of New York Stony Brook 11794
North Carolina	William Hogarth, Director Division of Marine Fisheries Department of Natural Resources and Community Development	Box 769 Morehead City 28557
North Dakota	Dale L. Henegar, Commissioner State Game and Fish Department	100 North Bismark Expressway Bismarck 58501
Ohio	Joseph J. Sommer, Director Division of Wildlife Department of Natural Resources	Fountain Square Building C Columbus 43224

Oklahoma	Kim Erickson, Chief Fisheries Division Department of Wildlife Conservation	1801 North Lincoln Oklahoma City 73152
Oregon	Randy Fisher, Director Department of Fish and Wildlife	506 SW Mill Street P.O. Box 59 Portland 97207
Pennsylvania	Edward W. Miller, Executive Director Pennsylvania Fish Commission	P.O. Box 1673 Harrisburg 17105-1673
Puerto Rico	Ivan Sanchez, Executive Director Marine Resources Development Corporation	P.O. Box 2629 Old San Juan Station San Juan 00903
Rhode Island	John M. Cronan, Chief Division of Fish and Wildlife Department of Environmental Management	Stedman Government Center Tower Hill Road Wakefield 02879
South Carolina	James A. Timmerman, Jr. Executive Director, Wildlife and Marine Resources Department	P.O. Box 167 Columbia 29202
South Dakota	Jeff Stingley, Secretary Department of Game, Fish & Parks	Sigurd Anderson Building 445 East Capitol Pierre 57501
Tennessee	Wayne Pollock, Chief Fishery Management Division Wildlife Resources Agency	P.O. Box 40747 Ellington Agricultural Center Nashville 37204
Texas	Gary Matlock, Acting Director Coastal Fisheries Branch Parks and Wildlife Department	4200 Smith School Road Austin 78744
Utah	William H. Geer, Director Division of Wildlife Resources State Department of Natural Resources	1596 West North Temple Salt Lake City 84116
Vermont	Steve E. Wright, Commissioner Department of Fish and Wildlife	103 South Main Street Waterbury 05676
Virgin Islands	Angel Luis Lebron, Commissioner Division of Fish and Wildlife Department of Conservation and Cultural Affairs	Estates Nazareth 101 St. Thomas 00802

Virginia	William A. Pruitt, Commissioner Marine Resources Commission	P.O. Box 756 2401 West Avenue Newport News 23607
	Frank O. Perkins, Director Institute of Marine Science	Gloucester Point 23062
Washington	Joseph R. Blum, Director Department of Fisheries	Room 115 General Administration Bldg. Olympia 98504
West Virginia	Ronald R. Potesta, Director Department of Natural Resources	1800 Washington St., East Charleston 25305
Wisconsin	Carroll D. Besadny, Secretary Department of Natural Resources	Box 7921 Madison 53707
Wyoming	Bill Morris, Director Game and Fish Department	5400 Bishop Blvd. Cheyenne 82002
Northern Mariana Islands	Nicolas M.L. Guerrero, Director Department of Natural Resources/ Office of the Governor	Commonwealth of the Northern Mariana Islands Saipan, Mariana 96950-9729
Trust Territory of the Pacific Islands	Administrative Officer Office of the Attorney General	Trust Territory of the Pacific Islands Saipan, CM 96950 9413
Atlantic States Marine Fisheries Commission	Irwin M. Alperin Executive Director	Suite 703 1717 Massachusetts Ave., N.W. Washington, D.C. 20036
Pacific Marine Fisheries Commission	Guy Thornburgh, Executive Director	Metro Center, Suite 170 2000 S.W. First Avenue Portland, Oregon 97201
Gulf States Marine Fisheries Commission	Larry Simpson, Executive Director	P.O. Box 726 Ocean Springs, MS 39564

NATIONAL MARINE FISHERIES SERVICE

Northeast Region

Connecticut	New Jersey	Richard B. Roe, Regional Director
Delaware	New York	Harold C. Mears, Chief, State/Federal
Illinois	Ohio	Relations Branch
Indiana	Pennsylvania	Federal Building
Maine	Rhode Island	14 Elm Street
Maryland	Vermont	Gloucester, Massachusetts 01930-3097
Massachusetts	Virginia	Phone: 617-281-3600
Michigan	West Virginia	
Minnesota	Wisconsin	
New Hampshire		

Southeast Region

Alabama	Nebraska	Craig O'Connor, Acting Regional Director
Arkansas	New Mexico	Beverly Eggeman, Chief,
Florida	North Carolina	Management and Budget Branch
Georgia	Oklahoma	Duval Building
Iowa	Puerto Rico	9450 Koger Boulevard
Kansas	South Carolina	St. Petersburg, Florida 33702
Kentucky	Tennessee	Phone: 813-893-3724
Louisiana	Texas	
Mississippi	Virgin Islands	
Missouri		

Northwest Region

Colorado	South Dakota	Rolland A. Schmitten, Regional Director
Idaho	Utah	Joe Scordino, Fisheries Management Division
Montana	Washington	7600 Sand Point Way N.E.
North Dakota	Wyoming	Seattle, Washington 98115
Oregon		Phone: 206-526-6140

Southwest Region

American Samoa	Hawaii	E. Charles Fullerton, Regional Director
Arizona	Nevada	James Morgan, Resource Management Branch
California	Trust Territory of	300 South Ferry Street
Guam	the Pacific Islands	Terminal Island, California 90731
	Northern Marianas	Phone: 213-514-6667

Alaska Region

Alaska	Robert W. McVey, Regional Director
	Ron Berg, Fisheries Management Division
	P.O. Box 1668
	Juneau, Alaska 99801
	Phone: 907-586-7228

PUBLICATIONS*

In carrying out project activities about 300 State scientists are continuously employed to gather information for better management of the fishery resources and to solve fishery problems. These studies have resulted in 783 publications, of which 676 have appeared in scientific journals and 95 have been for partial fulfillment of the requirement for advanced degrees from educational institutions. The literature citations list the project numbers in parentheses.

Some of the reports are available from the National Technical Information Service (NTIS). NTIS sells these reports as either paper or microfiche copies. Its address is:

National Technical Information Service
U.S. Department of Commerce
Springfield, VA 22151

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